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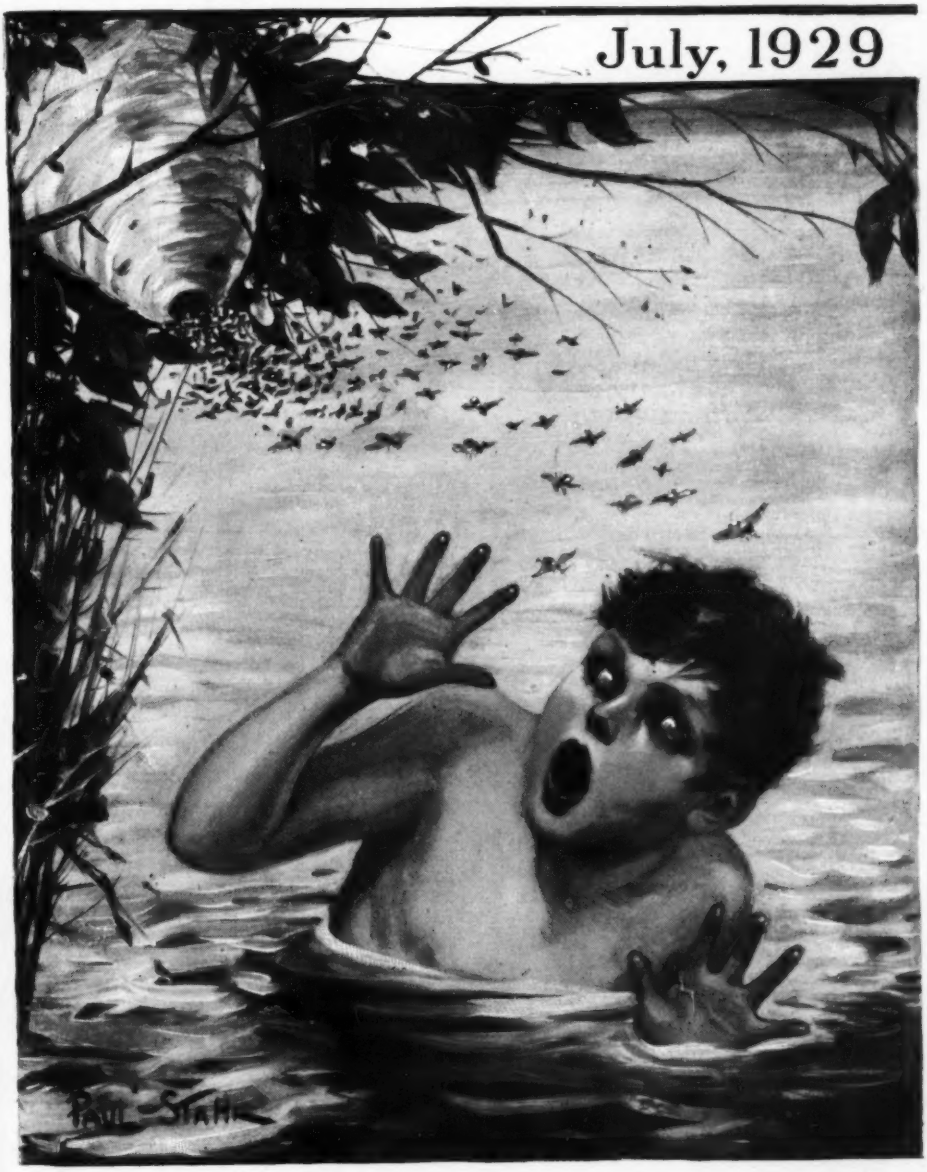
July, 1929



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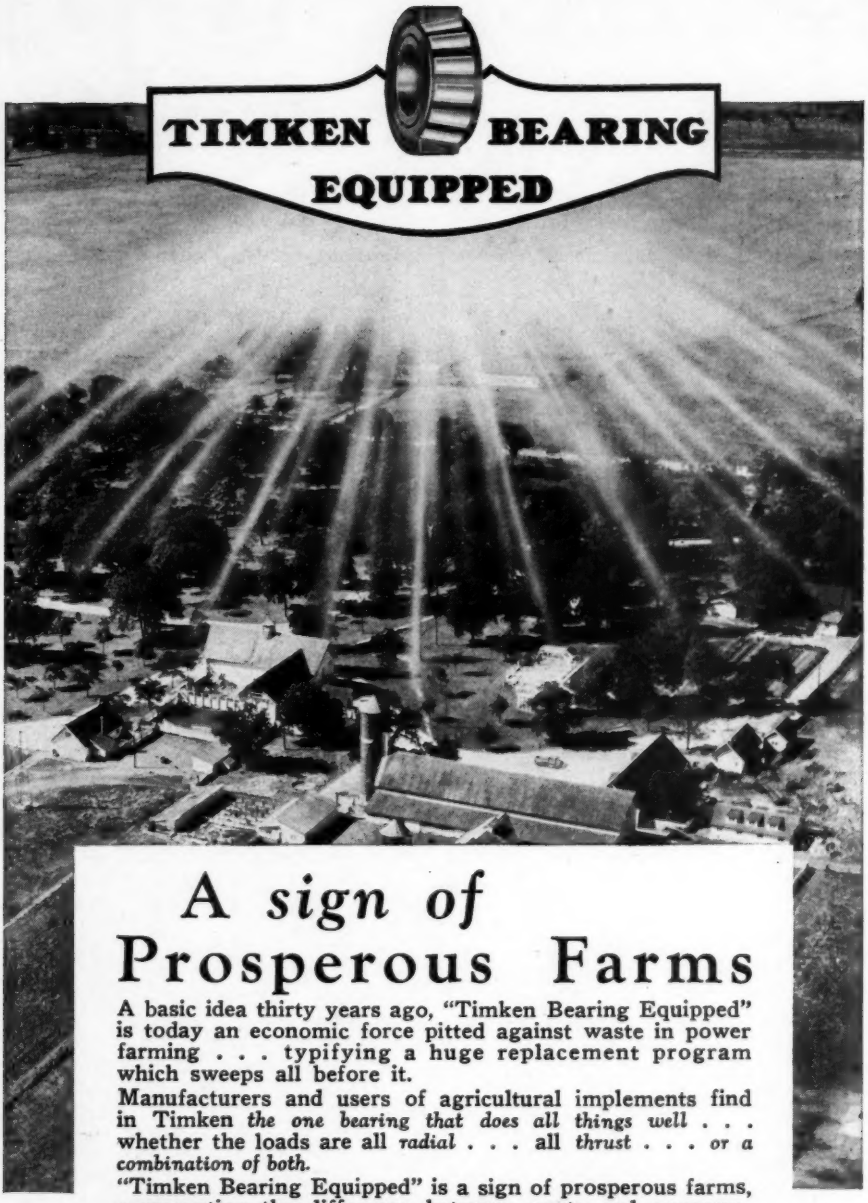

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R. H. STINCHFIELD, *Managing Editor* SID NOBLE, *Editor*

Editorial Offices: 19 West 44th Street New York

VOLUME XIII NUMBER ONE

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Tarpon fishing in southern Florida waters is the most exciting sport in the world.

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VOL. XIII NEW YORK, JULY, 1929 No. 1

Jeff says that lip-service loyalty and hysteria are not—

Patriotism

By Jeff McDermid

NOISE and oratory once passed for patriotism, and those with the biggest cannon crackers and the leather lungs were most persistent in their July devotions. After a nation has accumulated a scrappy reputation and has taken part in a Dawes plan or two, there is not so much need for either applause or applesauce. Hence the hush!

Boys no longer measure their patriotism by red fire, burned fingers, and tin cans tied to canine appendages. By the placidity of the Fourth and the empty hospitals on the fifth, we know that exuberance of spirit has largely vanished from our natal pageantry.

I can see those old plank seats in the court-house grove, crowded with doughty and dusty citizens, while the silver cornet band played Hail to the Chief. I personally was more interested in the chef than in any chief familiar to our neighborhood, because we used to have very early breakfasts on the Fourth. But I must confess there was a native majesty about our old county judge, whose natural Hibernian forensic power was happily enhanced on those occasions by a few minutes of convivial preparation down at Mike's place.

To us who have partaken of such celebrations with their fanfare and clumsy flamboyancy, the utter stillness and somnolence of the present era of muffled patriotism is a visible contrast.

Tarpon fishing in southern Florida waters is the most exciting sport in the world.

Yet we may well ponder whether this silence is a sign of a firm but quiet national pulse beat or if it means callow indifference. When my boy suddenly becomes unheard and unseen, I want to know if he is rapt in meditation like his Dad, planning some mischief like his Maternal Grandmother, or sound asleep like his Ancestors.

Spontaneous and earnest natural patriotism was part of the life of a nation emerging from the raw. Every stroke of the pioneer's ax was accent to the music of liberty, equality, and fraternity.

Perhaps it was inevitable that we should lose our old-time permanent patriots in exchange for a group of local boosters and handshakers, like the civic and commerce secretaries. The old-time patriots swore by their country because they had lost a leg for her, whereas the modern professional "greeters" often think in terms of financial opportunity and expediency.

Yet they also have their function in a democracy. Unless a citizen can know and prize his own community, how can he really retain any tangible patriotism? In the absence of these local scouts and pace-makers, some of us would be strangers in our own bailiwick.

WHEN I write of patriotism, my memory carries me back to childhood and the musty mysterious realms of a smoky Grand Army lodge room, down three flights of stone steps under the county court-house through a creaky door, into an ante-room with rush matting on the floor and a few card tables in the corners. To the rear was the "banquet hall" that in my estimation was large enough for the old Colonel's storied regiment, counting the ghosts. To the right was a thin board partition having a peep-hole station for the convenience of the watchful "outer and inner guards" who obeyed the majestic dictates of the corporal, then their chief commander.

On privileged occasions, such as camp-fire evenings, Memorial Days, and on the Fourth for a few moments prior to the veterans' line formation behind the gaudy Gibson Guards, a few of us sons and grandsons filtered into the inner sanctuary unmolested. Here, indeed, was the holy of holies for boys who read history with imagination and delight—the altar with its Bible and crossed swords; the roll of frayed battle flags in the corner, wrapped in oil cloth and tied with braid; the pictures of heroic members who had died in uniform; the mottoes and emblems; and the lithographs of generals on dashing steeds, framed in smoke and leaping over stricken comrades.

I try to picture the boys of today getting their doses of country veneration in so direct a manner from the World War Legionnaires—but I doubt if it catches so quickly or inoculates them so completely. The old Civil War recruits came home from near-by battlefields, and family quarrels are more searching anyhow. I am sure the boys of the Old South have felt the same tugging at their hearts and received perpetual patriotism from the same old soldier shrine.

Now I am fully aware that some of the tenets of their veteran vehemence were tinged with sophistry and that we youngsters drew from them some rank ideas on the sacred protective tariff and the divine right of the Republican party. I also know that they voted the way they "fit" and carried the "all's fair" idea home with them from the war to use it in tight places. Yet above and beyond a few of these evident human frailties, there was in them a hopeful spark that kept the home fires glowing with provincial Americanism.

Whether our newly adopted citizens, good as they often are, ever will get the legendary thrill out of it that these original combatants imparted to their gaping grandsons is a source of con-

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"Kool Krisp" Lettuce

By H. J. Rahmlow

Secretary, Wisconsin State Horticultural Society, Madison, Wisconsin

IT may not be entirely new for a young man to put himself through college by earning money in the summer time growing truck crops. In Wisconsin, however, there is only one young man doing it by growing head lettuce. Not only is he the largest grower of head lettuce in the State, but he also produces an unusually good quality of this popular source of vitamin A.

The head lettuce is cut and packed in the fields, then placed in the shade on this wagon. When the soil is dry enough a truck is run through the field in place of the tractor and wagon.

The surprising thing is that Carl Niebauer of Phillips, Wisconsin, the young man in question, is a city boy. He first started working on this particular truck farm, which is located on the edge of the city of Phillips, in northern Wisconsin, at the age of 14 and took to gardening as a duck takes to water. When he was 16 he was made foreman of the crew of six or eight boys who took care of the lettuce, potatoes, cabbage, carrots, beets, celery, and other truck crops grown on the farm.

In addition to his daily wages, he was given a bonus of 10 per cent of the net returns on the head lettuce crop for managing the crew. This bonus brought him a neat sum every year with one exception—when the six acres of lettuce grown that year were flooded by severe storms.

So interested did Carl become in this type of work that he decided to take up the agricultural course at the University of Wisconsin. When he was a sophomore, the farm was offered for sale and Carl's father decided to buy it. Being in another line of business, he could not take care of it himself, and so Carl was given full authority to go ahead. This he did with splendid success, not only making enough money to put himself through the University, but providing work for three of his younger brothers.

Along with the energy of its youthful manager, commercial fertilizers have made possible the success of this particular farm, which consists of twenty acres of muck soil. Previous to 1920 it had never produced good crops because the owners did not know that commercial fertilizers were necessary. The soil looked so black and rich that everyone considered it to be very fertile and thought it would grow crops without any plant food being applied. As a result the crops were very poor and the owners became discouraged, thinking the soil was not adapted to growing anything but wild hay.

Begin to Use Fertilizers

About 1920 the farm was purchased by the local county agent, who proceeded to run some fertilizer experiments and discovered that potash would work miracles in crop improvement. Potatoes, heretofore a failure on the farm, were selected for the first tests. In cooperation with the State Experiment Station, one-fourth acre plots were laid out as follows:

Plot No. 1—250 lbs. potash per acre.

Plot No. 2—300 lbs. of 16 per cent superphosphate.

Plot No. 3—No fertilizer.

Plot No. 4—200 lbs. of potash and 300 lbs. of phosphate.

Plot No. 5—800 lbs. of rock phosphate.

The results were surprising. The owner stated he had lost $100 due to the experiment because of decreased yield where no fertilizer was applied.

Plot No. 1 with 250 lbs. of muriate potash produced 325 bushels per acre.

Plot No. 2 with phosphate alone produced 115 bushels per acre.

The check plot without fertilizer, produced 103 bushels per acre. The combined fertilizer, potash and phosphate, resulted in a yield of 336 bushels per acre, and the rock phosphate 108 bushels per acre.

It certainly proved that without potash, which potatoes need and which was not present in the soil, the other elements of fertilizer gave no results. Potash was the limiting factor, and no amount of other fertilizer could increase the crop.

It was also noticed that cabbage did not grow very well. There were complaints by consumers that the heads contained black spots on the inside leaves. The cause of this was a mystery for some time. Some of the cabbage heads were sent to the Plant Pathology Department at the College of Agriculture, and the report came back that the spots were absolutely sterile, showing that there was no fungus or bacteria present, and consequently no disease. The suggestion was made that some element of plant food was lacking.

The following year 250 lbs. of muriate of potash were applied to the cabbage in the row at the time the plants were set out with the result that the crop was doubled in quantity and the black spots disappeared.

When both potash and nitrogen were added to celery some wonderful results were obtained, the stalks being practically double the size they had been before the fertilizer was used. The quality was also improved a great deal, the stalks being more crisp and of better flavor.

A grower of head lettuce once made the remark, "Lettuce is a crop which will either fill your pocket with money or your heart with woe." Because of this element of chance, it is an attractive crop to grow, and if one can win more times than he loses, it is quite profitable.

Heat is the most difficult problem in growing lettuce. A few hours of hot weather will ruin a crop just about ready to cut. Imagine having an acre of fine green heads almost hard enough for cutting, with the market active. A shower comes up and soaks the ground and is followed by a hot clear day. Chances are when the heads are

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NEW MEXICO

Experiment Station

By C. P. Wilson

Editor, New Mexico College of Agriculture

IN the fall of 1889 the Board of Regents of the New Mexico College of Agriculture and Mechanic Arts met and organized the College and Experiment Station at Las Cruces, in the part of the Rio Grande valley known as the Mesilla valley. Las Cruces is 22 miles north of the New Mexico-Texas boundary line.

The citizens of the valley donated to the institution a farm, containing approximately 100 acres, in addition to a quarter section of mesa land. Additional tracts, totaling about 300 acres, have been purchased since, and a few years ago Congress turned over to the college nearly 100 sections of unirrigated Government land for experimental, instructional, and demonstrational purposes. This tract at the present time is being used principally as an experimental cattle ranch, it probably being the largest ranch of the sort controlled by an agricultural college.

Only a small percentage of the mesa ground so far has been placed in cultivation, as it is necessary that water for irrigation be pumped onto this tract. The 238 acres in the valley are irrigated with gravity water from the Elephant Butte Dam, which is located about 70 miles north of the institution.

When the Agricultural College was established, most of the land that was donated to it was still in the "wild" state. Much of it was covered with mesquite and other desert shrubs, while

The staff of the New Mexico Agricultural Experiment Station.

a smaller acreage was occupied by sand dunes. Needless to say, it presented a very unpromising appearance, parched and ill-favored.

The average annual precipitation in the vicinity is only 8½ inches, so that irrigation is essential for crop production. With irrigation, the climate in the Mesilla and most of the other valleys of New Mexico is favorable for the production of a majority of the temperate zone crops and the growing season is comparatively long.

Problems Vary

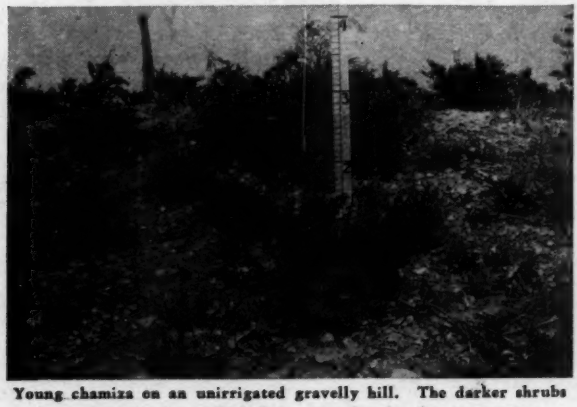
The irrigating that had been done on the farm was of a rather primitive sort. Much of the attention of the first station staff, consisting of three members, was devoted to the necessary grubbing, leveling, and construction of laterals to the main ditch, so that additional land could be placed under cultivation. The first investigational work conducted was with field and horticultural crops.

On account of its wide variations in climate, both as regards temperature and precipitation and varied soil conditions, there are an unusual number of important fields for agricultural research in New Mexico. In addition to extensive irrigation and dry farming, or combinations of the two, there are considerable areas at the higher elevations on which the precipitation is usually ample, but the growing season is short. So far as acreage is concerned, however, by far the larger part of the State is devoted to stock raising, about 98 per cent of New Mexico still being used for this purpose.

A dry-land field station at Tucumcari, in eastern New Mexico, and an acclimatization field station at State College are operated by the United States Department of Agriculture in cooperation with the Agricultural College. The main experiment station has plots in different parts of the State, for the testing of various garden and field crops and range forage plants, although most of the experimental work is done at State College.

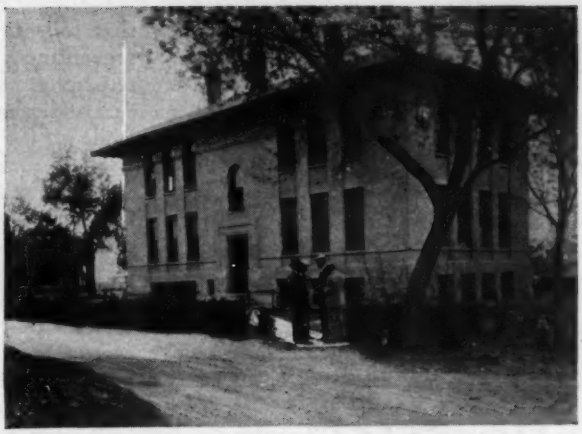
Through its variety tests of cotton and its advocacy of the formation of pure seed districts in some of the irrigated valleys, the station has aided materially in placing the production of this crop on a sound basis in the southern half of the State. Although the irrigated valleys of New Mexico are comparatively narrow, some of them now are recognized to be among the best cotton growing districts in the United States. The average yield in the Mesilla valley is nearly a bale of high-grade lint to the acre. The crop also is grown to a moderate extent under dry farming in eastern New Mexico.

One rather peculiar fact that has been brought out at the station in recent years is that while sugar beets cannot be grown profitably in most parts of New Mexico, on account of the curly-top disease, it is possible to produce large crops of sugar beet seed of satisfactory quality and at comparatively small expense. At the present time nearly all of the seed of this plant that is used in the United States is imported from Europe, where it takes two years



Young chamiza on an unirrigated gravelly hill. The darker shrubs are creosote bushes, which have no value for forage purposes.

to produce the crop. At the end of the first season the stecklings, or small beets, are pulled and stored, a loss of about 20 per cent occurring in storage. The following spring they are transplanted and a seed crop is harvested some months later. In the lower irrigated valleys of southern New Mexico, it has been shown that if the planting is done early in September a good crop of seed is ready for harvesting the following July. The beets remain in the ground throughout the winter, no storage or transplanting being necessary. The time required for production is thus cut in half and the necessary labor greatly diminished.



The agricultural building, State College, New Mexico, with the new dairy laboratory at the extreme left.

The station also has carried out field tests of large numbers of varieties of alfalfa, grains, fruits, and vegetables, as well as with many of the ornamental plants. Other important phases of its work have been the determination of the suitability of waters for domestic or irrigation purposes, fertilizer tests, and investigations on the control of insect pests and plant diseases. A few years ago the station originated a variety of pecans that is much in demand in the Southwest, the tree being quite prolific and the nuts large, thin-shelled, and of excellent quality.

While the growing of peppers cannot be considered one of the major agricultural enterprises of the State, the research work with this crop at State College has been worth hundreds of thousands of dollars. Through a long period of selection, a member of the horticultural staff produced a variety that yielded more heavily than any other sort grown. The large, smooth pods sell readily in the market. A method of irrigation was also devised that resulted in greatly reducing the damage done to the chili plants by the blight, a serious disease of the crop.

Numerous feeding experiments with livestock have been conducted during the past quarter of a century. It has been found recently that while the meal made from cotton seed produced in the irrigated valleys of New Mexico is of excellent quality for feeding to most classes of livestock, it is quite a poor source of protein for laying hens. If more than a very small percentage of the ration is of this concentrate, the eggs are not only of inferior grade, but are about a third smaller than normal.

One of the highest producing Guernsey cows was a year or two ago developed at the station; in fact, for over a month she gave several pounds more milk a day than any other cow that the breed ever has produced.

Among the largest, if indeed not the most important agricultural or livestock problem of the Southwest, is that concerned with the production of more forage on the ranges. The grasses are unusually nutritious. Some of the native shrubs also furnish a large amount of good feed for cattle and sheep, and this is often available when there is little grass, on account of drouth or by reason of its being

covered with snow. There are still about 16,000,000 acres of Government land in New Mexico, in addition to several millions of state land and other extensive areas in forest reserves, Indian reservations, and railroad holdings. Much of this is still open range, with little or no fencing. This has led to the ranges being badly abused, a large percentage of them now being in deplorable condition. Even when there is considerably more moisture than usual, some areas produce little forage, aside from a few weeds.

Open Land

Quite apart from the extensive researches that have been conducted by the United States Forest Service on the Jornada and Santa Rita Range reserves in New Mexico and Arizona on natural reseeding, clipping studies, estimation of carrying capacity, etc., in recent years the New Mexico Station has devoted considerable attention to the artificial reseeding of some of the ranges. It has been estimated that at the present time the average gross returns from 100 acres of New Mexico range land amount to only about as much as the returns from one acre of irrigated land. An annual increase of only a half a cent an acre from the area in the State that is devoted to the production of range livestock would mean an added return of about $380,000 a year.

Aside from the fact that there is so much Government land that cannot be fenced and which is not sufficiently productive, on account of the scant rainfall, to be of value for homesteading, recent researches have shown that rodents are important factors in preventing valuable forage plant from returning more promptly to a great deal of the arid or semi-arid open range land of the Southwest. Soil conditions, in some cases, also appear to exert a marked influence in determining the flora of certain sections. It has been found, for instance, that chamiza (*Atriplex canescens*), one of the saltbushes, seldom grows in New Mexico in soils that do not contain calcium carbonate in pulverized form at or near the surface of the ground. This shrub endures drouth exceptionally well, even when only an inch or two tall, but it frequently is destroyed by rabbits or other rodents. With an annual precipitation as low as eight or nine inches it often makes quite a vigorous growth. It is among the most valuable of the browse plants, furnishing, in many sections, a great deal of feed when there is little grass available. On the recommendation of the experiment station, a number of the stockmen of the State have planted seed of this bush on their ranches and some of them have met with considerable success with it.

One of the most useful services that the station has performed has been in connection with discouraging the growing of crops that experiments have demonstrated are not suited to the region, or in advising careful consideration before the expenditure of funds on such propositions as the pumping of water from deep wells for the production of ordinary field crops. With the healthful climate and frequently an abundance of water at a

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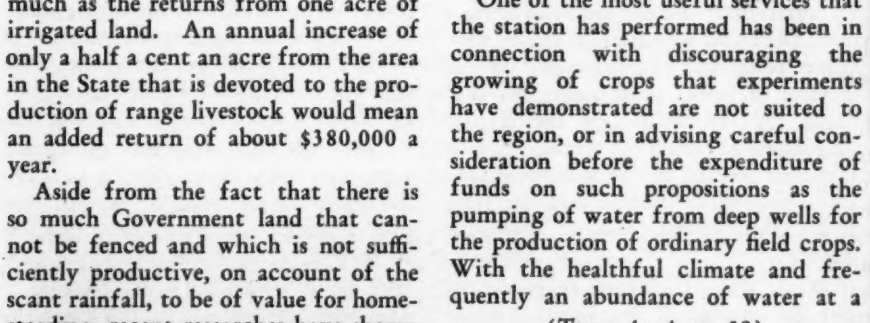

This is a field of sugar beets harvested for seed at the New Mexico Experiment Station.

In this experiment near Conway, Arkansas, the Irish potatoes on the right received no fertilizer; those on the left received 800 lbs. of a 4-8-12 per acre.

Diversification Wins!

By Kenneth B. Roy

Agricultural Editor, University of Arkansas

COTTON, very little livestock, systems of farming ranging from the plantation to the small owner-operated farm, and one-crop farming were in the main the major problems confronting W. L. Hall, Faulkner County Agricultural Agent, Arkansas, in building a county-wide program that would make for an improved agriculture.

From a study of the acreage production data, Hall knew that the one-crop system of farming that had been followed for so many years in Faulkner county had depleted the soil of its virgin fertility. These data told the story of low cotton and corn yields, and the small acreage of soil-improving crops. Hall saw that to bring farming in Faulkner county back to a profitable business, it was going to take a definite, long-time program for soil management and soil improvement.

The program that was evolved as a result of close study of the county's farming condition called for more livestock, with particular emphasis on the dairy cow; better pastures; increased acreages of legumes; control of soil erosion; increased supply of organic matter; conservation and utilization of manure; increased yields per acre through use of high-grade fertilizers; and crop rotation.

The first definite step toward the establishment of better pastures was made in 1925 by County Agent Hall. The recommendations for the establishment of these demonstration pastures were based on the plans furnished by the University of Arkansas College of Agriculture. These demonstration pastures were established, one acre in size, and the specifications called for fencing, convenience to the barn and lot, information on soil type, preparation of soil, establishment of Bermuda grass as a foundation, proper fertilization, and three cultivations during the season, supplemented with lespedeza. These demonstrations were pastured one year after their establishment. The first pasture was established with John Moix of Conway.

In the same year a cowpea growing contest constituted the first effort to-

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Agriculture Today

VIII Biological Survey

By Frank George

MORE than half a billion dollars' worth of crops and livestock are reported destroyed annually by predatory animals and injurious rodents. The destruction would be much greater were it not for the cooperative control work by State and Federal agencies. By the same token, according to Paul G. Redington, chief of the Federal Bureau of Biological Survey, more intensive control campaigns would very materially reduce the destruction under the half a billion dollar figure.

Recently, at the request of Congress, the Bureau has been conducting field operations and research at its laboratory at Denver, Colorado, with a view to developing a more effective cooperative program for the eradication, suppression, or bringing under control of predatory animals. A 10-year cooperative program of predatory animal control has been worked out now, calling for an annual Federal appropriation of $1,378,700. State officials and other cooperators have assured the Bureau that they would support the program and continue the present ratio of cooperative expenditures on the average of approximately 2½ to 1, if and when the increased Federal expenditures are authorized.

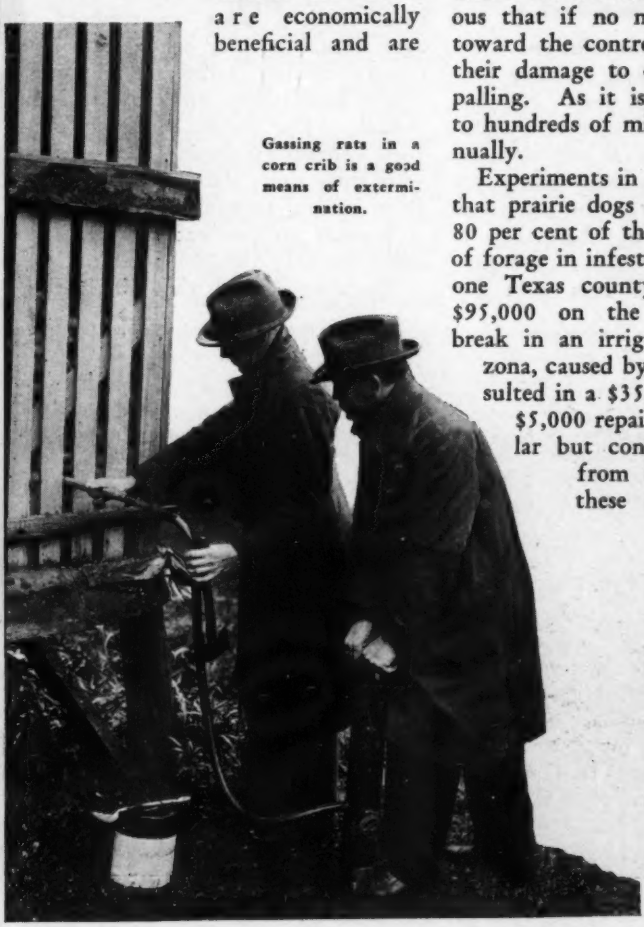
The 10-year program, according to Mr. Redington, should make it possible to prevent constant reinfestation of cleared areas, and thus make the savings permanent, and to conduct control operations on the public domain and cooperatively on areas where heretofore no work has been done for lack of funds. The plan does not contemplate complete eradication of predatory animals, because in some areas this is neither practicable nor advisable, but the control of such ani-

Rats are the most generally destructive of farm rodents.

mals so that their damage will be negligible and in many cases ended completely.

Asked to indicate the three outstanding current agricultural problems with which the Biological Survey is now dealing and toward the solution of which it is working, Mr. Redington enumerated (1) the control of injurious rodents; (2) the determination of the relations of birds to agriculture and the attitude the farmer should assume toward the various species; and (3) the control of predatory animals.

"County agents," he declared, "are coming more fully to appreciate the very close relationship that exists between wild life and agriculture. Some animals and birds are economically beneficial and are considered friends of the farmer. Others are looked upon as pests, in many cases to be endured. It is one of the objectives of the Biological Survey by educational methods to better acquaint the farmer, the fruit grower, and the stockman with their friends and foes among wild-life forms and with steps that should be taken to encourage the presence of the former and to bring the latter under control."



Gassing rats in a corn crib is a good means of extermination.

The injurious rodents include such widespread species as ground squirrels, prairie dogs, jack-rabbits, pocket gophers, and brown rats. Less generally known, but locally exceedingly destructive, are rodents such as woodchucks, porcupines, house and field mice, wood rats, and kangaroo rats. These various rodents are so numerous that if no measures were taken toward the control of their activities their damage to crops would be appalling. As it is, the losses amount to hundreds of millions of dollars annually.

Experiments in Arizona have shown that prairie dogs destroy from 25 to 80 per cent of the annual production of forage in infested areas. Rabbits in one Texas county incited a loss of $95,000 on the cotton crop. A break in an irrigation ditch in Arizona, caused by pocket gophers, resulted in a $35,000 crop loss and a $5,000 repair bill. Less spectacular but continuous losses come from the depredations of these and other rodents, and in some localities settlers are reported to have been faced with the necessity of abandoning their ranches to the rodents. The total toll levied by the Norway, or brown rat, alone, is estimated to exceed $200,000,000 a year.

An example of rat depredation that

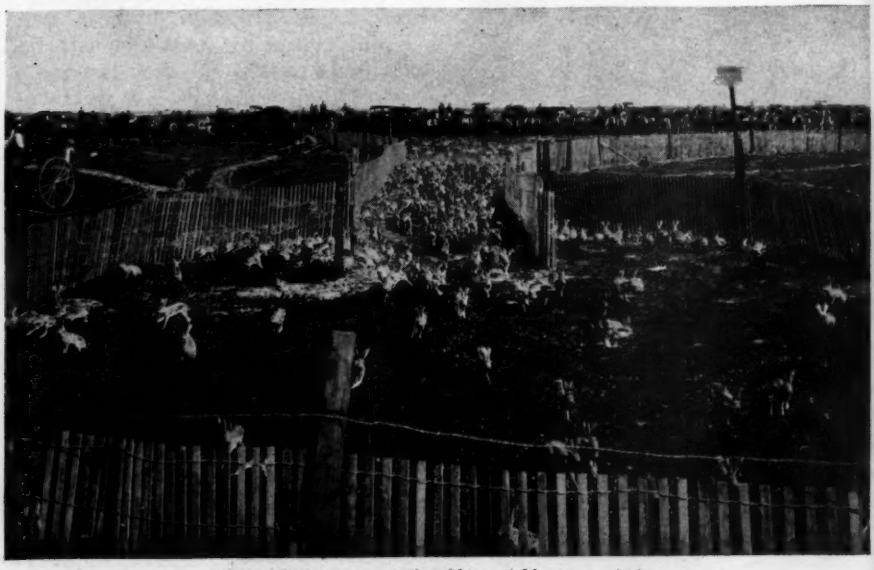
indicates the extent of its destructiveness was reported recently from Galveston county, Texas, where a fruit grower declared that rats had ravished his berry patch to such an extent that instead of his being able to ship 115 lugs of berries as he had the preceding year, he could pick only 4 lugs last year. Another farmer reported a loss of $500 in sweet potatoes and turnips from 20 acres, and still another reported a loss of $60 in figs, $1,500 in trees girdled, and $100 in truck crops. Losses in watermelons, cantaloupes, tomatoes, carrots, beets, beans, and corn were also reported from Galveston county, one farmer declaring that he had lost $1,000 in watermelons on 10 acres through depredation of rats.

Organize Campaigns

Organized anti-rat campaigns were conducted in cities and country districts in 16 states last year. Notable among the campaigns in country districts was one in Texas organized in 54 counties which yielded nearly 4,000,000 dead rats. In the campaign in Ellis county, Texas, where there is a population of less than 57,000 persons, nearly 250,000 rats were destroyed in one month. Many cases were reported to the Federal authorities where 20 per cent or more of the trees in orchards were killed by field mice. One orchard in the State of Washington suffered 50 per cent damage, and a heavy infestation of mice in Jones and Lyman counties, South Dakota, was responsible for the loss of more than 40,000 acres of corn.

A systematic cooperative rodent control program is in effect by the Biological Survey, the country being divided into 15 districts for that purpose. These districts are state-wide in parts of the West and in the East include many states. District leaders correlate the control operations and direct the work of cooperators. The cooperating agencies include agricultural colleges, state departments of agricultural agents, other state and county officials, farmers' and stockmen's associations, and private individuals. The funds contributed by these cooperators during the past year were three times the amount expended from Federal appropriations and made it possible to conduct operations on more than 15,500,000 acres of land.

Predatory animals that Mr. Reding-



Organized drives on jack-rabbits yield many victims.

More than 4,800 bobcats, which are especially destructive of sheep during lamb season, were captured last year.

ton estimates take an annual toll of livestock valued at $30,000,000 include wolves, coyotes, bobcats, and mountain lions. Bears sometimes become predatory. The most persistently destructive of the lot, however, is the coyote, an animal that is responsible also for transmitting to livestock and human beings such dread diseases as rabies and tularemia. This animal is not confined to Western ranges. Last year, in a New York county bordering Lake Ontario, coyotes destroyed $10,000 worth of sheep.

Each wolf and each mountain lion is charged on the average with destroying annually livestock worth $1,000; each stock-killing bear, $500; and each coyote and each bobcat, $50. Some animals become so notorious from their depredations that they are individually named, either from the locality about which they range, or from some peculiarity of footprint. Examples of such renegades are "Old Leftie," a wolf that traveled on three feet after leaving one foot in a trap; the "Split Rock" wolf of Wyoming; and the "Custer" wolf of South Dakota. Many others have been similarly named and have had prices set on their heads.

One wolf in New Mexico is reported by stockmen to have killed 150 cattle worth $5,000 during six months preceding his capture by a Biological Survey hunter. A predatory-animal leader of the Survey declares that each mountain lion will kill on the average two deer a week, and in Colorado one case is on record of a lion killing 100 sheep in one night. Three coyotes in Utah killed $500 worth of sheep in an hour. One bobcat in Texas destroyed 35 head of sheep in a month. A stock-killing grizzly bear in New Mexico slaughtered 50 head of cattle one season, and the following spring had 32 more to his discredit when overtaken by a Survey hunter.

Employed Hunters

From 300 to 500 predatory-animal hunters are now operating under 14 district leaders. These men are instructed "to get" the animal they are after; when they are sent to sections where stock killers are at large, they stay there until they dispose of the last one. During the past year hunters brought in the skins or scalps of 35,709 coyotes, 9 large gray wolves, 716 red wolves, 219 mountain lions, 40 lynxes, 4,838 bobcats, and 226 predatory bears, thereby preventing

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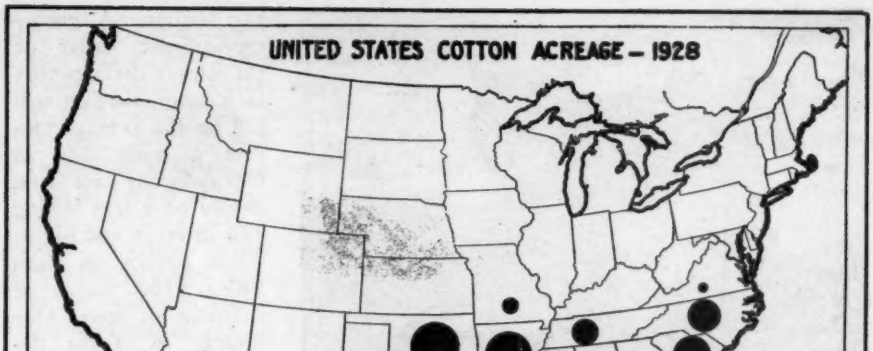
Calcium cyanide dust is used in destroying rodents.



COTTON

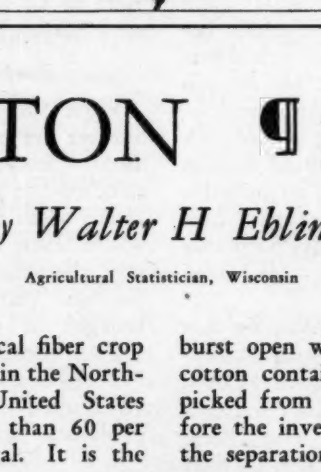
¶ *Eighth of the crop series*

By Walter H Ebling

Agricultural Statistician, Wisconsin

COTTON is a tropical fiber crop grown very largely in the Northern hemisphere, the United States usually producing more than 60 per cent of the world's total. It is the world's leading fiber and one of the important crops of commerce. Since the invention of the cotton-gin by Eli Whitney, an American, in 1793, cotton has come into world-wide use.

The cotton plant may be described as a small tropical shrub growing numerous seed bolls in which small oily seeds are imbedded in fine white fibers. These bolls burst open when ripe, and the fluffy cotton containing the seed usually is picked from the plants by hand. Before the invention of the cotton-gin, the separation of the seeds from the lint was a slow and difficult hand process and cotton was expensive because of the large amount of labor required in this separation. With the coming of the saw gin, the amount which could be so separated was limited only by the quantities that could be grown and used.



Cotton ranks high among the crops, it being second in value

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On the Threshold

By A. A. Burger

Cedar Falls, Iowa

EDITOR'S NOTE: *At the beginning of each year it is customary to take stock of ourselves and corral all the optimism possible. Therefore, with six months of the year gone, and with the farmer in the midst of the growing season with all the attendant worries of dry-spells, insects, hired help problems, etc., this hopeful article should prove interesting and helpful. It will help to tide over tired workers to harvest time and another check-up.*

"AGRICULTURE is today at the threshold of the greatest prosperity in its history." This statement may well be questioned. Taken at its face value it is a visionary dream. On the other hand, there is plenty of sound evidence and opinion upon which we may base an conservatively optimistic attitude of the future. It is the purpose of this article to set forth the reasons for this belief and to analyze the more pertinent facts and opinions that have been expressed by those best qualified to speak—statements which we believe would most nearly represent the consensus of opinion of our best authorities and the sentiment of the majority of our rural people.

Since the drastic deflation of 1920, we have passed through one of the most trying periods in American agricultural history. We here want to recognize this fact and also to admit that this period of deflation has blighted the hopes and ambitions of many of our most progressive farmers and has put to the acid test of adversity the very character of our people. From the standpoint of our future progress, one of the most unfortunate conditions that has remained with us as a result, has been a pessimistic, discouraged attitude, which we have, unfortunately, allowed to distort our judgment and perhaps somewhat confuse our vision.

We need but call to mind that in the time of our greatest prosperity extreme optimism prevailed, and that at that time most of us thought that those prosperous conditions, for the most part, likely never would materially change. We acted accordingly. Time has shown that we were mistaken. And so it is not strange that through the long years of our great depression, we have come to look upon the future with misgivings and mistrust. The trouble is that we have allowed our experiences rather than our judgment to control our viewpoint. This is one of the recognized and peculiar traits of human nature.

The pendulum of economic forces—the fluctuation of prices up and down—is based upon this peculiarity of men. If we but stop to think, we know that there is no such thing as complete stability. We know that the pendulum always swings too far in either direction. From extreme prosperity, it swung too far into extreme depression, and it is now on its return to better times.

This is no time to lose faith in agriculture. Since the low point of 1921, the purchasing power of agricultural products—the value of the farm dollar in buying commondities—has risen from 69 to 90 in October of 1928. We cannot expect that this buying power will be steadily upward,

for there may be times when it will become stationary or may drop, but the average of these fluctuations up and down will represent a general trend that is upward. It is an economic fact that the price of land always follows the decrease or the increase of farm commodity prices. As we come to consider the situation with reference to agriculture at this time, we should not overlook the fact that the present price of land, in comparison with the inflated American dollar, is one of the cheapest commodities on the American market.

Farm Values

It is estimated that the average for farm values in the State of Illinois for 1928, was 96 per cent of prewar. In Indiana they are reported as 84 per cent of prewar values. We do not have the figures for the State of Iowa, but it is likely that the average present values would be somewhere between these figures. It is, of course, well known that there are many farms in all of the corn belt states that are now selling far below their actual productive value. Many of them are now being purchased at prices that will return a fair rate upon the investment.

With the land situation in view, we call to mind a statement made by Professor Warren of Cornell University a number of years ago—and the facts since 1921 will bear him out—that the economic tendency of prices of products which the farmer buys is to become less and of those which he sells is to increase. This adjustment can have but one effect upon the price of land. A similar adjustment has taken place after every great war.

Just after the close of the Spanish-American war, or from 1900, we witnessed a gradual increase in the price of farm commodities. From that time to 1910 the price of lands in the corn belt states advanced nearly 10 per cent per year, and we purchased farms for the increase of the value of the land, and not alone for the income which they would yield on a productive basis. During all of this time more lands were being brought under cultivation.

The figures of the Government show that for the last 25 years, from 1900 to 1925, the number of farms in the United States increased from 5,737,372 to 6,371,640, or 11 per cent, while the number of acres in these farms increased 10 per cent. Population increased during this time from 76,000,000 to 116,000,000, an increase of over 40 per cent. That meant that there were 40,000,000 more souls to feed and clothe, that much more cotton, linen, wool, silk, furs, leather, and food of all kinds needed to support them. With all the increase in the acreage of new land brought under cultivation, lands steadily advanced.

But there is now little more new land to be brought under cultivation. The number of farms and the acres in these farms is now at a standstill. The population of the country goes on increasing steadily at the rate of 1,500,000 per year. Think of this great advantage to agriculture, if we but keep out the cheap products produced by cheap labor on lands that, in many countries, are very much cheaper than our own.

The present conditions in the agricultural situation in this country has led John Lee Coulter, noted economist and president of the North Dakota Agricultural College, to make this statement: "Agriculture is today at the very threshold of its greatest prosperity. It is the soundest industry in the United States today. Owners of farmland, whether they live upon the farms or are non-resident owners or have investments in farm mortgage loans, will undoubtedly hold the most advantageous position of any class of citizens of the United States during the 25-year period just ahead of us."

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Good hay crops can be obtained from properly handled Volusia soils.

Babying Soils

By Hugh Fergus

Slippery Rock, Pennsylvania

A FEW million years ago when the earth took a cold spell and the glaciers visited the northern part of the United States, there was created a type of soil rather variegated and different from any of the soils south of the line where the glaciers ended. Soil scientists have named it Volusia.

I have lived in the "Volusia" country for 13 years and find that these soils need to be "babied" constantly in order to keep up production. If they are neglected, they quickly "go back" and grow cinquefoil, moss, and poverty grass. I know of at least three of these farms less than two miles from my own that at one time were as productive as any of the farms in the community. Now, if they were fenced, one cow would starve to death in a summer if she depended on the blue grass growing on them.

On the other hand, some of these farms that had reached this wild state, taken hold of by good farmers, in a very few years became productive and profitable. One striking case in particular was a field on one of these "rundown" farms that had grown nothing but poverty grass for so long that when the farm was bought by its last owner the old timers told him there was no use in trying to grow anything on it. He turned a deaf ear on these pessimists. By liming, manuring, and fertilizing the corn, fertilizing the oats, and manuring and fertilizing the wheat, in three years from poverty grass this field turned off a crop of wheat that yielded more than 30 bushels per acre.

I do not believe any State records

have been broken here in Pennsylvania on Volusia soils, although some very good yields have been made. Proof of this is in the fact that last year the county north of me had four members of the 400-bushel per acre potato club. The highest yield of ear corn on a measured acre in this community was 160 bushels made by a corn club boy. Ninety bushels of oats per acre have been secured. Once in a long while 40 bushels of wheat per acre is grown, but more often even on the best farms wheat is a losing proposition and is gradually dying out of the rotations. Hay has produced as high as four tons per acre in two cuttings.

My farm is a Volusia farm. I am not enough of a soil specialist to know the various sub-types by name, but do know that we are near enough a terminal moraine to have several of them. The predominating one is a heavy loam underlaid with a heavy clay (not a limestone clay) that always drains off slowly. In some places this clay is so hard that it is almost impervious to moisture. Hardpan is the local name for it. In spite of the fact that we have drained most of these places with tile laid in rows 35 feet apart, they still have a soggy tendency.

Then we have one of a grayish black color. When I first came here, I used superphosphate almost wholly and rarely got even a fair crop of this kind of soil. I did not think nitrogen was lacking, for most of our farm gets two applications of eight loads of manure once in every four years. Then I tried adding potash, usually a 12-5 mixture, and since then we have had pretty good yields.

We have an almost black loam and a gravelly loam. These two need potash, too, but not for the same reason that the grayish black soil does. Straw grows rank and is weak. An 0-12-5 helps stiffen up the straw on these soils.

There are three types that we fertilize in a special way. In two of the fields the acreage is so small that we load the drill up and plant them separately.

For thirteen years we have been trying out various rotations and fertilizing systems in an effort to get the best ones, until now we have the farm producing 50 per cent or more above the state average. While we have been doing this, we have made it a practice to keep enough dairy cows and young stock to consume all the roughage and most of the grain from the 74 acres we run in the crop rotations. If we do sell $200 or $300 worth of grain each year, we make up for it in 2,500 to 3,000 pounds per month of 32 to 48 per cent protein feeds that are used to balance up our home-grown feeds for milk production.

Use 3-Year Rotation

My farm is separated by a public road and on account of this and the topography we cannot make less than six fields to run a three-year rotation of corn, oats, and clover. We will average about 25 acres of each crop every year. We have been averaging about 100 bushels of ear corn, 60 bushels of oats by weight, and 2 to 3½ tons of hay per acre, depending on the kind of second crop we get. If we have a surplus of corn, we can always get at least 50 cents per bushel of ears for it. We grow a pure variety of oats (Cornellian). By advertising in local papers we have never gotten less than 75 cents per bushel for it as seed. Our cows return us, according to our cow-testing association records, two to three times as much for the hay as if we sold it off the farm. Wheat was not only unprofitable, but since we grow only clover hay it interfered with hay harvest, and again in the fall the planting of it interfered with the harvesting of the corn crop.

Each year we buy from five to seven tons of fertilizer. Two times we have tried drilling 200 pounds per acre of superphosphate on the corn ground

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Weeds or Crops?

By A. L. Stone

Agronomist, Wisconsin College of Agriculture

"KILL the weeds" is the slogan on most farms these July days. On some farms weeds have taken possession of the fields. On others they are fighting with the crops for existence. Weeds have fought for existence for centuries and are more hardy than the crops, hence, if given sway, the weeds will win and the crop either will be killed or the yields greatly reduced.

There are some weeds which spread by the underground parts, but if no weeds were ever allowed to go to seed, the spread would be much slower and the injury to the crop much less. Therefore, one important part of the program is to keep the weeds from going to seed.

ANNUALS—Plants which live but one year. As weeds of this class reproduce themselves by seeds only, it is important to keep them from going to seed and any method which will accomplish this eventually will eradicate them. Ragweed, foxtails or pigeon grasses, wild mustards, Russian thistle, red root, and corn cockle are examples. They are found in cultivated fields, in yards, along fences, and in grain fields after harvest.

BIENNIALS—Plants which live two years, producing only leaves and roots the first year and a flower stalk and seeds the second. Like annuals they can be killed by preventing seeding. Usually they are found growing in meadows, pastures, and out-of-the-way places, and on the whole easily are controlled. Burdock, wild lettuce, bull thistle, mullen, cheat, wild parsnip, and wild carrot are examples.

PERENNIALS—Plants, the roots of which live for more than two and often many years. The stalks arise from the root and seed may be produced each year. There are some perennials which never produce seed and spread only by the roots or portions of the roots. Horse radish is one of these, and in some instances Canada thistles produce no seed. It is important to prevent perennials from seeding, because they easily may be spread by their seeds, but they can-

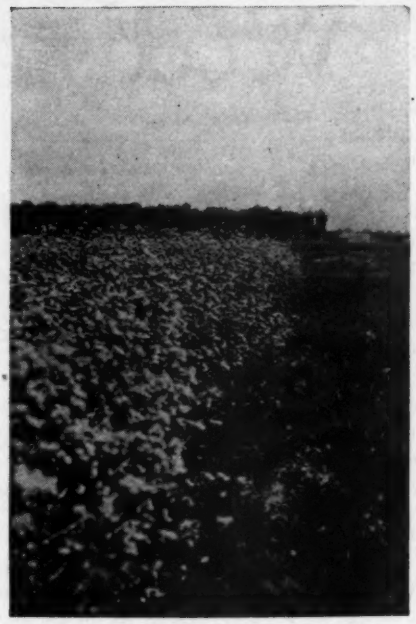
Railway companies are sometimes careless in preventing weeds from seeding and spreading.

not be eradicated by preventing seed bearing. It is necessary to kill the underground parts. Quack grass, Canada thistles, wild morning-glory, ox-eye daisy, snapdragon or butter and eggs, common milkweed, and perennial sow thistle are our worst perennials.

Annuals which escape the cultivator in cultivated crops like corn, potatoes, and sugar beets usually grow into splendid specimens of their kind. Such plants bear almost unbelievable numbers of seeds. Ragweed 19,000, pigeon grass 142,660, wild mustard 143,000, lambsquarters 608,300, barnyard grass 1,292,700, and tumbling weed 6,150,850 seeds to the plant are amazing figures found by actual count. Their seeds will lie buried in the soil unharmed for years. Only a very few weed seeds will decay in less than three years. Wild mustard, Canada thistle, common ragweed, and pennycress are plants, the seeds of which will lie buried for ten years or more only to grow when brought up to the warmth and light by plowing or cultivation. Seeds of sweet clover, buried 44 years, and Indian mallow 56 years, have grown freely when turned to the surface.

Biennials resemble annuals in the above respect, but bear fewer seeds to the plant. Examples are roadside thistles with 15,196, burdock 47,883, wild lettuce 242,825, and mullen 1,294,040 seeds to the plant. As biennials like annuals depend wholly upon seeds for their reproduction, the importance of killing them before seedings is plain.

Perennials bear less seed to the plant than either annuals or biennials. While it is necessary to kill the root to eradicate the plant and while some of them like Canada thistle, perennial sow thistle, wild morning-glory, quack grass and others spread by their underground parts, it is also necessary to keep them from bearing seed. This is shown by the fact that the common milkweed bears approximately 10,302, dandelion 14,079, snapdragon 16,966, common plantain 59,400, buckhorn 117,700, yellow dock 143,500, and yarrow 577,600 seeds to each well-developed plant. In addition weeds belonging to all of these classes have seeds which may be carried by wind, snow, and water, so there are good reasons why they should not go to seed.



Partial summer fallow followed by a smother crop is a good way to eradicate bad weeds. This buckwheat was sown about July 1, following intensive cultivation.

For the dairy farmer, the following rotation is a good one. The first year corn, in which no weeds are allowed to go to seed, should be grown. The second year the field should be sown to oats or barley, seeding at the same time to clover and timothy using eight pounds of red clover and six pounds of timothy seed per acre. The third year two crops of clover hay or one crop of hay and one of seed can be taken. The fourth year will produce a crop of timothy hay or pasture. In the fall of the fourth year, the sod should be manured and plowed so as to be ready for corn the next spring. If the corn is kept *clean* this rotation will very largely prevent annuals from going to seed.

By the time the soil is ready to work

in the spring, millions of young weed plants have started to grow. Careful cultivation with disc or spring-tooth harrow will kill them, but the cultivation brings more weed seeds up to the warmth and air and if the weather is warm, in 24 hours another crop of weeds is started. One weed killed at this time means a weed less in the grain or corn. At no time in their lives can weeds be killed more easily, and a little more time and labor than farmers usually give to the preparation of the seed bed will pay good dividends in the crop.

Use weeder, spike-tooth harrow, and cultivator freely in all cultivated crops like corn, potatoes, etc. The weeder and harrow will kill many small weeds and will do little harm to the crop if used in the afternoon after the plants are wilted. In the morning when the plants are fresh, they break off easily, and some damage will be done. The weed plants can be most easily killed when they are young and advantage should be taken of every opportunity to catch them at this tender stage of growth.

"Do you know," said one young farmer, "I had a good lesson last spring on the value of using a spike-tooth harrow on a potato field where the potatoes were just coming up. We had planted 15 acres of potatoes and had harrowed about one-half of them when it began to rain. The rain kept up intermittently for 10 days, making it impossible to harrow or cultivate. On the part of the field which was not dragged, the weeds got such a start that no further attempt to kill them was made and the field grew up to weeds, producing no potatoes whatever. On the dragged portion of the field, the potatoes yielded 150 bushels to the acre. I would not have believed that one harrowing could make so much difference."

This is a good instance of what one harrowing will do. It must be remembered, too, that it is much more economical to kill weeds with a wide tool like a disk, spring-tooth or something harrow than with a one-row cultivator.

Cut or pull all scattered weeds along fences, roadsides, and in fields, so the seeds cannot be blown, washed, or dropped on the fields. This must be done before the seeds are formed, because most of the weed plants will ripen their seeds after the plant is cut or pulled. If for any reason the work cannot be done before the seeds are formed, the plants should be burned to prevent any chance of reproducing their kind.

Before seeding time is reached, the plants may be left where cut. Cut below the surface of the ground so that no small branch will be left for the well-developed root to furnish with a large food supply. Such a plant will ripen its seeds in much shorter time than if allowed to grow naturally.

Be sure not to wait too long before cultivating, cutting, or digging. Many weeds are very deceiving in appearance, and while seeming to be perfectly green and still in bloom will be found to bear ripened seeds. Red root, lambsquarters, chickweed, pursley, and pigeon grasses are good examples of such weeds. There are others having the same habit, so begin early and do not let them reach the seeding stage.

Scattered plants of the perennial weeds which appear upon the farm should be pulled up or dug up during damp weather while the ground is soft and before the seeds have formed. If seeds have once formed, do not drop

This is a good way to kill small patches of noxious weeds. The paper does the work while the farmer is busy elsewhere.

the weeds upon the ground, but carry them off the field and burn them. There is often enough vitality left in the plant to ripen the seed even after it is pulled up. If weeds spread by running roots or rootstocks, great care must be taken while digging to see that no portions of the root are left in the soil.

Small patches of weeds not over two rods square can be killed most economically by mowing the weeds close to the ground when plants are budded, and covering with heavy building paper. Tar paper is preferable because it sheds water better. Overlap the strips of paper carefully for about eight inches; extend the paper three feet beyond the edge of the patch so that no plants can come out from under it. The paper should be held down by planks, fence rails, or stones. Sixty to ninety days of this treatment should completely kill the weeds. Although the paper is somewhat costly, it does the work while the farmer is busy at other farm operations, and hence is comparatively economical.

Another means of killing perennial weeds is to set the plow just deep enough to turn running roots to the surface. Plow as early in the fall as possible. Keep patch cultivated until ground freezes. Allow no leaves to get above the earth's surface. Plow again in the spring, about two inches deeper than the preceding fall. Cultivate as before until the first of July. Sow buckwheat or millet at the rate of one bushel per acre, or sudan grass seed, 25 pounds per acre. This cultivation will so weaken the weeds that the millet or buckwheat will be growing vigorously before the weeds recover and will smother them completely if the season is favorable. Hemp also may be used as a smother crop but requires very fertile soil for best results. It should be grown in cooperation with other farmers, as it is difficult to dispose of the crop in small quantities.

Perennial weeds may sometimes be killed in cultivated crops like corn and potatoes if planted in hills far enough apart so that they can be cultivated lengthwise, crosswise, and diagonally. The cultivation must be very thorough and persistent. Complete destruction of the weeds may require some hoeing in addition to other cultivation. This method is an excellent one for sandy soils if the cultivation is sufficiently careful and persistent. If weeds are not entirely killed the first season, it may be well to plant a cultivated crop and repeat the process the second year. Persistent cultivation is the key-word to success by this method.

Summer fallow should be used only where the weeds so thickly infest the ground as to make any of the other methods uncertain. It requires that no crop be grown upon the field for one year. Plow and cultivate as outlined in above, but continue the process throughout the season, plowing at least three times and cultivating often enough to keep the weeds from getting above the surface. If, by September 1, the weeds appear to be dead, the ground may be properly prepared and sown to fall rye, which may be plowed down in the spring for a green manure crop, and corn planted upon the field. If any weeds then appear, they can be killed by use of the hoe. Fall seeding of timothy and spring seeding of clover on the rye will allow for a hay crop the next year if this seems desirable. With weed eradication, as with other farm operations, weather conditions may upset all plans, but the chance must be taken or nothing will be accomplished.

In these days when it is necessary to raise every pound of human and animal food to the acre that it is possible to produce, no weeds can be allowed to take the plant food and moisture from the crop or to compete with it for air and sunshine. Every weed kept from going to seed makes possible the growth of a crop plant. Keep the weeds from seeding and keep them under control.

Southern Dewberries

By R. B. Fairbanks

BECAUSE the fruit crop ripens soon after strawberries are gone, and comes in just ahead of blackberries, the dewberry as a fresh fruit crop rapidly is gaining ground in the South. Not only do the southern markets take this berry, but the northern and eastern markets are taking it in ever-increasing quantities. This berry fits right in the little niche between the strawberry and blackberry crop, and just that few weeks' time that comes in between the ripening of these two crops offers the dewberry grower his opportunity. The commercial production of southern dewberries is heaviest in North Carolina, South Carolina, Georgia, and Texas, although the crop is grown to a lesser extent in several other sections of the South.

The dewberry plant has been properly trained.

The common method of growing dewberries is to set the plants in checks five feet apart each way, with the vines tied to stakes that are seven feet long and driven 18 inches in the ground, thus giving a stake 5½ feet high for the vines to grow on. These vines are tied at two or three different places with a soft cotton twine string and when the tip is about a foot to a foot and a half above the top of the stake it is clipped off, the idea being to check further terminal growth and to throw the growth into the lateral branches.

The dewberry produces fruit only on wood that grew the previous season. For this reason, it is urgently important that an abundance of strong, vigorous, disease-free wood be grown each year, and it is here that liberal feeding in the form of commercial fertilizer enters. Fertilizers, of course, play an important part in the production of almost all crops, but this is doubly true in the case of the dewberry.

In the South the usual method of growing this new wood each year is to pull up the stakes and cut off the old vines immediately after harvest is completed. Not only the old vine, but all of the new shoots that may have come up during the spring and early

summer are cut smooth with the crown of the plant. All of this material is taken off and burned, the burning being highly important as this helps to control anthracnose and double blossom, the two most serious diseases of the dewberry.

New canes spring up quickly. Then fertilization and cultivation take place. This is one of the most important parts of the work, because if a strong, vigorous cane growth does not take place between harvest and the fall of year, the crop the following season will naturally be reduced.

Immediately after cutting off the old canes, therefore, a liberal application of fertilizer is applied. Usually 500 to as high as 1,000 pounds per acre is given. The fertilizer used should be high in nitrogen, usually something like 6 per cent is used, and around 3 or 4 per cent of superphosphate, and 2 or 3 per cent potash. This fertilization is purely for cane growth and that is the reason for the liberal amount of nitrogen being applied and the small amount of superphosphate and potash.

When to Apply

The dewberry crop is fertilized twice annually, the application mentioned above being given immediately after harvest for cane growth and the other one just as growth begins in the spring. This second or early spring application is given for fruit production, and, therefore, a fertilizer high in superphosphate and potash and comparatively low in nitrogen is used. Usually the growers apply a fertilizer at this time analyzing around 2 to 4 per cent nitrogen, 8 to 10 per cent superphosphate, and 6 to 8 per cent potash. This high per cent of potash is necessary in order to give proper firmness and quality to the berries. All the way from 500 to 1,000 pounds or more fertilizers per acre are given at this application. Thus we see that the successful dewberry grower uses from 1,000 to 2,000 pounds of fertilizer per acre, making two applications, one in the spring, just as growth starts, and the other in the summer, immediately after the old canes are cut.

Not only is this liberal fertilization considered necessary to get a good berry, but it also aids, indirectly, at least, in the control of anthracnose and double blossom. But cutting off the canes immediately after harvest, both the old and the new, and burning them, these diseases are naturally reduced to a minimum. Then the liberal application of fertilizer aids in the production of vigorous, strong canes, which in turn means that they are less susceptible to disease attacks. It is a well-known fact, that any strong plant or animal is more able to successfully withstand disease or other adverse conditions than is the poorly nourished plant or animal.

After the fertilizer is applied in the summer, cultivation is kept up until the fall, or until the new vines grow enough and spread out over the middles to prevent further cultivation. These vines are allowed to lie on the ground until the following spring, at which time the stakes are again driven in the ground and the vines tied to them. At this time the spring cultivation takes place.

However, liberal fertilization, the cutting and burning of canes each season, and thorough cultivation will not entirely control. It is advisable to spray. Bordeaux mixture applied at the proper time and used in connection with the preventive measures mentioned above enable the dewberry grower to control almost entirely the two destructive dewberry diseases, anthracnose and double blossom. The 4-4-50 bordeaux formula is the one usually applied. The first application is given to young vines when they are a foot long. This is in the summer and is usually from two to four weeks after the old vines are cut. This spraying is repeated once every two or three weeks

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Good Potato Yields

By A. E. Wilkinson

Vegetable Specialist, Connecticut Agricultural College, Storrs, Connecticut

WHEN a grower produces from 523 to 559 bushels or approximately 100 barrels of potatoes per acre, in the slang language he is "going some." He is not only "going some" for Connecticut, but he is "going some" for any state in the United States. In fact he is going so strong that he is right up among the leaders in potato production. J. J. Bermant of Vernon, Connecticut, is such a grower.

Mr. Bermant had not had very much experience with potatoes. In 1926 his first attempt at growing this crop called for 40 acres. It was taken on as a side-line, the main crop being shade-grown tobacco, 80 to 150 acres. In order to help him in his work the first year he hired some of his neighbors to work with him. The neighbors happened to have had some experience in potato raising. In addition to the neighbor's experience he was aided largely by the writer in determining a careful plan for his crop. As a result of these plans and hard work, 16,000 bushels of potatoes were gathered from the 40 acres or 400 bushels per acre—a very good yield and particularly so because some of the land had been lying idle for a number of years and was not in as high a state of cultivation as other portions of the farm.

The next year against all advice, Mr. Bermant launched on too big an enterprise or too much of an increase job for one year. He planted 150 acres to potatoes. The yield was not particularly good. The large acreage was beyond the knowledge and experience of the men. Approximately 250 bushels per acre were harvested. In many sections this would be considered a good yield, but not so when one has produced 400 bushels or more.

In 1928 a more sensible acreage was agreed upon, the total being approximately 55 acres. On some of the land 523 bushels per acre were obtained; from still other portions of the farm 559 bushels were harvested. The crop was very fine; 94 per cent of the potatoes were number ones, 5 per cent seconds, and less than 1 per cent culls or big potatoes. For three years' experience this, of course, was excellent.

How is it possible for a man with a limited knowledge of a crop to produce such a large yield? A little study of the man and his work with tobacco may help to enlighten one on the subject. Mr. Bermant raises, as previously stated, about 80 to 150 acres of shade-grown tobacco. He is a very careful grower, willing to spend a little extra time and money in having his rows straight, his rows spaced correctly, the soil well cultivated, enough plant food to grow a good tobacco crop, and every detail even to the very small-

The potatoes were carefully graded and bagged for the market.

est looked after as it should be. This careful attention has resulted in good yields of tobacco yearly.

Applying these things to potato growing, Mr. Bermant tried to get the latest information in potato production, not only the last word on certified seed, but on fertilizing, sprayings, spacing, time to plant, depth of planting, and the other thousand and one things that make up for successful potato production. After he had learned these things, as far as possible he tried to apply them in a thorough, business-like manner.

Used Certified Seed

In more detail, Mr. Bermant purchased seed of the very best certified strains obtainable. These strains were purchased from men known in competitive growing to have produced seed stock that is yearly high yielding. In looking at the certification, Mr. Bermant paid more attention to the growers than to the fact that they have practically disease-free seed stock. These potatoes were stored under ideal conditions and were brought to Mr. Bermant from the first to the middle of May just before planting so that he was able to cut the potatoes on the day of planting or at least not more than one day ahead. In every instance the potatoes were cut by hand, using an upright, fixed knife on a bench, the operator pushing the potatoes against the knife. Each seed piece was of a generous size and had one or more thrifty eyes. He spaced his potatoes in row 34 inches apart, and the seed pieces in some cases 9 inches and in others 12 inches apart. It readily can be seen that a large number of plants per acre were obtained. At the same time enough space to grow the plants correctly was allowed. There was a uniform depth of planting of seed, the average depth being approximately four inches. A new two-man planter of the 1928 pattern was purchased for this work.

A very interesting and important part of Mr. Bermant's potato raising was the fertilizer which he used. This fertilizer was made up so that it would not injure tobacco if it should be grown on the land in a year or two following the potato crop. I personally criticized the formula as not being necessary. The formula analyzes 8½-11-10½. This is too strong and wasteful of material for average potato raising in this state and probably would be for any other nearby states. Approximately 1,800 pounds per acre were applied, mostly broadcast, although a slight amount was placed in the planting machine and distributed in the row. The fertilizer consisted of 550 pounds of castor pomace, 250 pounds of nitrate of potash, 200 pounds of sulphate of potash, 300

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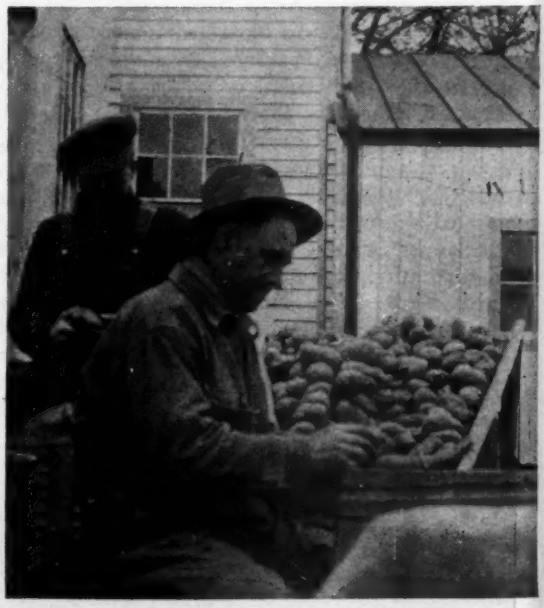
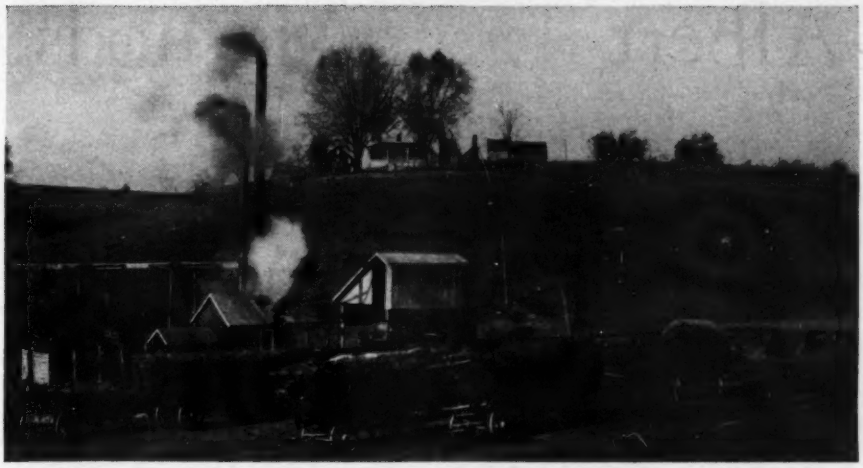


The cutting was done by hand against a knife on the edge of a barrel.



A wormseed oil distillery near Woodbine, Maryland.

Doubling *the* Yield

By E. K. Walrath

Westminster, Maryland

DOUBLING his acre yields of wormseed oil by seriously studying fertilizers on his own farm is the profitable experience of Francis Hering, Westminster, Maryland.

Five years ago in 1924 Mr. Hering planted 13 acres to wormseed. The crop was fertilized that year in the row with 300 lbs. of a 2-8-5 mixture per acre. The 13 acres produced 517 lbs. of oil or 400 lbs. per acre. In 1925 the herb from nine acres fertilized with 300 lbs. of a 2-8-8 per acre distilled 500 lbs. of oil or 44 lbs. per acre, practically the same amount of oil on three less acres than the previous year.

The response of the wormseed to a higher analysis of potash was so great that in 1926 Hering increased his analysis to 2-8-12 and also applied double the amount of this fertilizer or 600 lbs. per acre. The yield on seven acres was 504 lbs. or 72 lbs. of oil per acre, more fertilizer, more potash, and the same amount of oil on six less acres than in 1924.

Still Mr. Hering was not satisfied. He thought he was growing too large an herb, so in 1927 he used sulphate of ammonia instead of hen manure for his nitrogen, and increased the acre application to 800 lbs. of 2-8-12 per acre. He also reduced his planting to five acres, and the yield was 404, or 81 lbs. per acre.

Last season he further increased his fertilizer analysis to a 2-8-14 at the rate of 800 lbs. per acre. This was applied with a corn planter, and the plants were set by hand. On the rows where the men and boys transplanted the wormseed plants directly in contact with the fertilizer a large number of plants were injured. Where the plants were set to the side of the fertilizer, there was no injury. In spite of the poor stand Mr. Hering reports that the field made 258 lbs. of oil on

(*Turn to page* 52)

Albert Tarr's Methods

By G. R. Cobb

Salisbury, Maryland

FARMERS should grow the ammonia they need for crops, according to Albert Tarr, leading farmer in Sussex county, Delaware. And Mr. Tarr surely practices what he preaches, for although producing more corn per acre than anyone else in the county, he purchases no ammonia from his fertilizer dealer.

The name of Albert Tarr is well known among the farmers and business men of Delaware because of his success as a premier corn grower. In 1928 Mr. Tarr won first place in production with a yield of 82.1 bushels of shelled corn per acre. Compare this yield with the 23-bushel average of the state as a whole. Not only was the yield large enough to surpass all others, but the quality was so outstanding that samples of the corn grown on Mr. Tarr's farm won prizes at corn shows throughout the entire State of Delaware.

In addition to being a corn grower par excellence, Mr. Tarr is leader of the 4-H Boys Club of his community, and by constant effort he has now taught the boys how to produce more and better corn. As a result of his work in this connection none of the farmers in this community imports corn but has a surplus, whereas in the olden days much corn was bought by the owners of these several farms.

Unlike and yet like many other successful farmers, Mr. Tarr spent many of his earlier years working with machinery as he was a pattern-maker. But he realized that his health was more important than high wages and so he resigned his position and bought the farm where he now resides.

At the time he bought his present home, some 17 years ago, the land, a Sassafras sandy loam, was so impoverished that on 7 acres Mr. Tarr was able to produce but 98 half-bushel baskets of corn and much of this was nubbins. Today the same 7 acres will average 75 bushels of shelled corn per acre, a gain of more than 50 bushels per acre.

Mr. Tarr first used a commercial fertilizer mixture analyzing 0-12-5, which was a popular mixture for corn and wheat in his section. But somehow or other he believed that more potash was needed and so each year for the past three years he has had his fertilizer dealer add one more per cent of potash until at present he is using an 0-12-8, with the intention of trying out extra potash next year as a side-dressing.

"I believe that on this land and with my method of farming, a top or side-dressing of 150 to 200 pounds of muriate of potash per acre will increase both the yield and quality that I am now getting with 8 per cent potash. Anyway I am going to try it out and see what happens," said Mr. Tarr when asked about his plans.

The idea of using more potash came to Mr. Tarr as a result of one of his experiments. He applied 400 pounds of an 0-12-7 fertilizer per acre, on his corn and then told his wife that he was going to see if there was anything to this side-dressing idea. To make a long story short, Mr. Tarr side-dressed with 250 pounds per acre of the same analysis and harvested a larger and better crop. He left out 12 rows that

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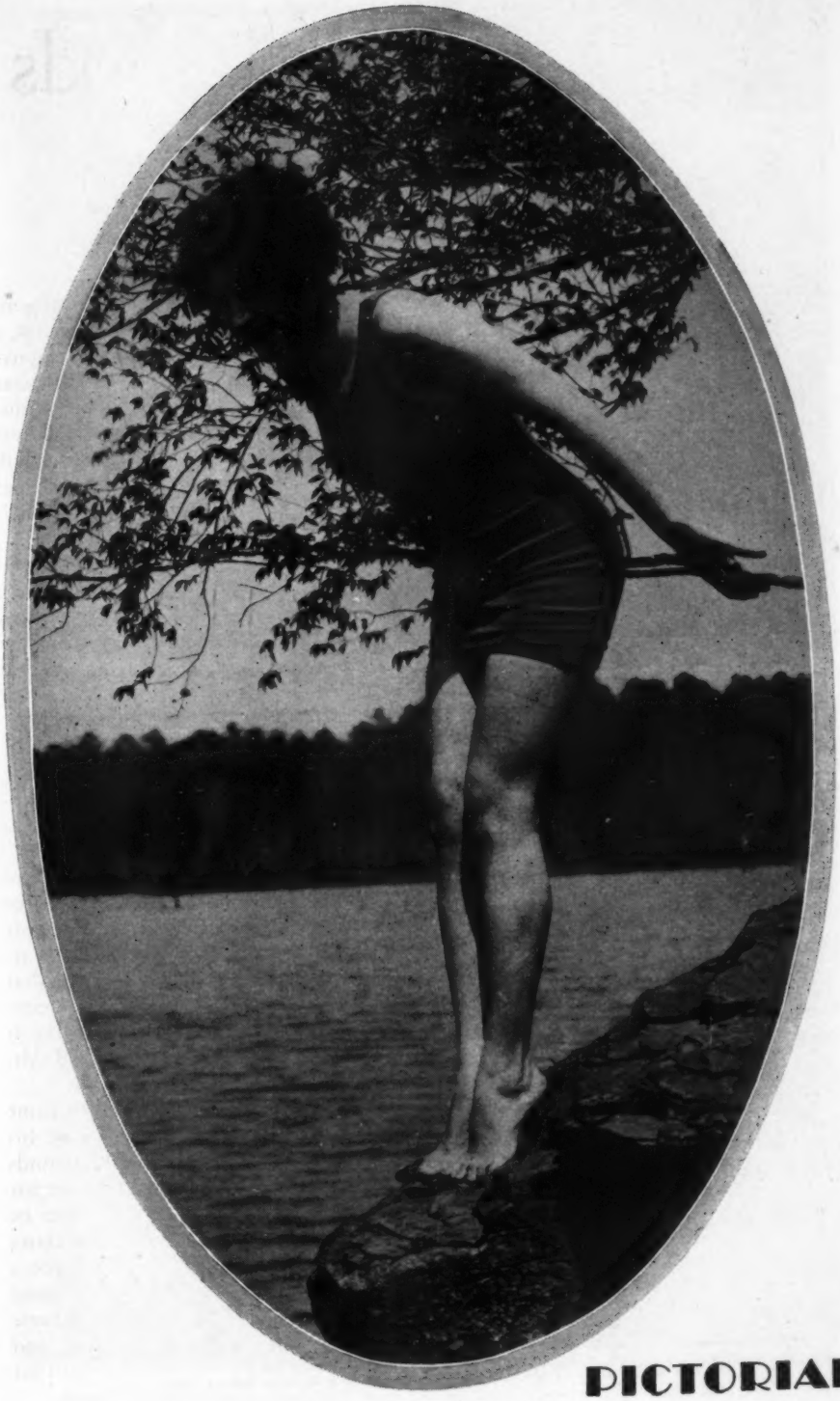


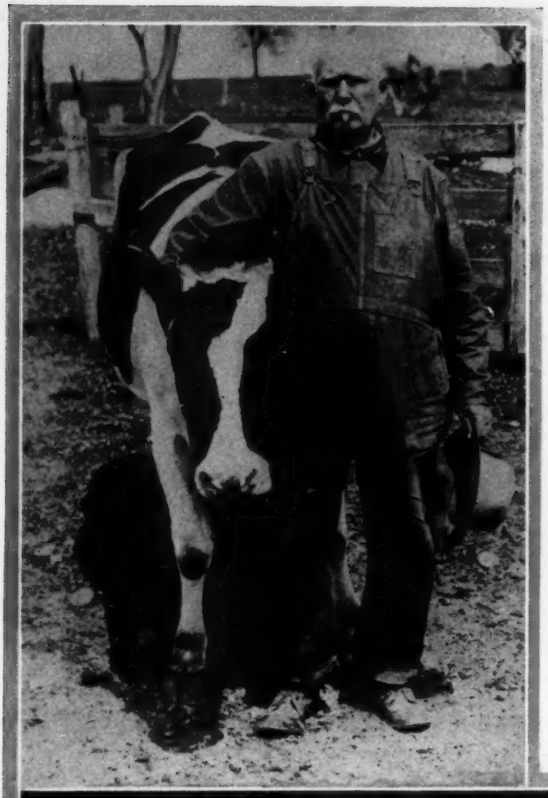
PICTORIAL

"Buddy," the police dog, is making a real buddy out of "You'll Do," a little Jersey calf.

The White river in the Ozarks of Arkansas is a famous fishing spot.

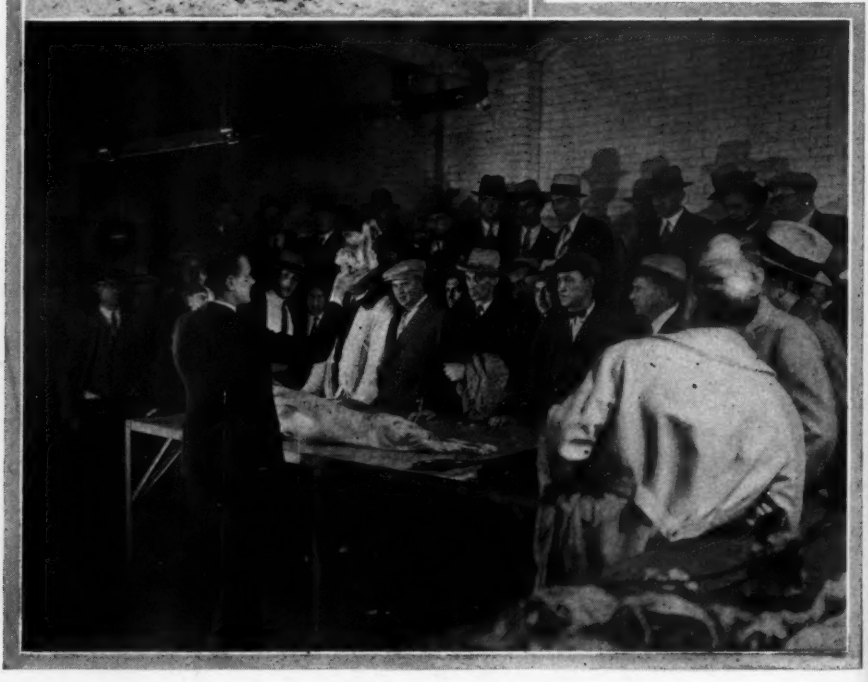
Long Island, New York, is noted for something besides its ducklings, as evidenced by this potato field.

An ingenious Wisconsin farmer made this foster mother for a litter of pigs whose mother had died.

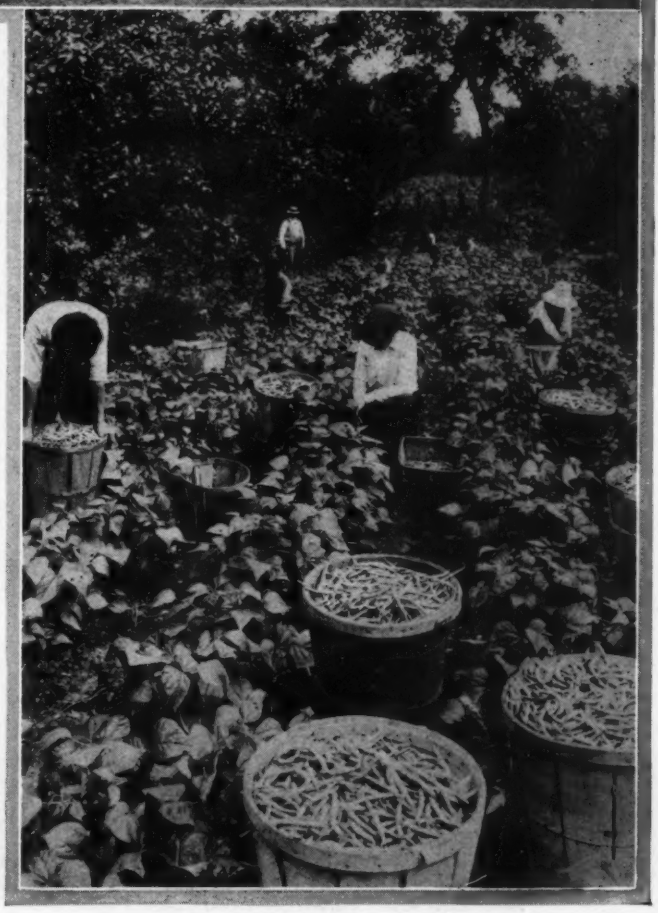


Left: J. J. Aulenbacher of Milwaukee county, Wisconsin, has seven boys and seven girls and seven farms and even his cow has seven on its forehead.

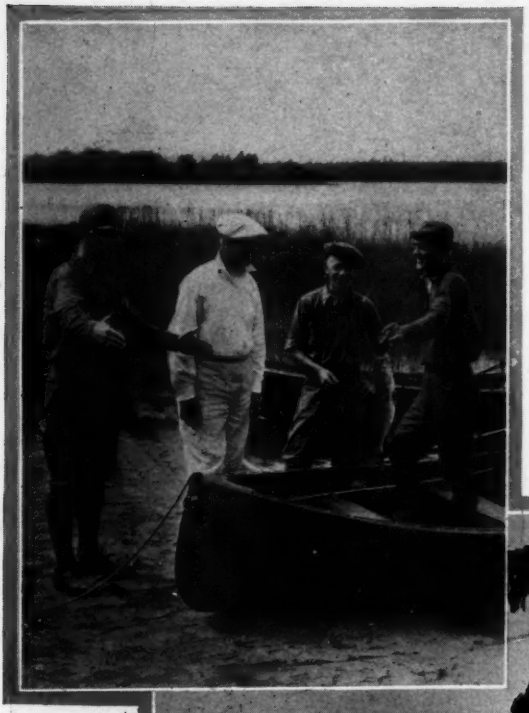
Below: W. B. Hartsell, said to be one of the world's fastest meat cutters, recently put on a series of demonstrations in Washington, D. C., for the benefit of housewives and persons in the U. S. Department of Agriculture. He is shown exhibiting a mock duck which he prepared from a part of the lamb carcass with a few deft strokes of the knife and saw.



Above: Canning factories are now running "full blast." This is a fruit and vegetable cannery near York, Michigan.

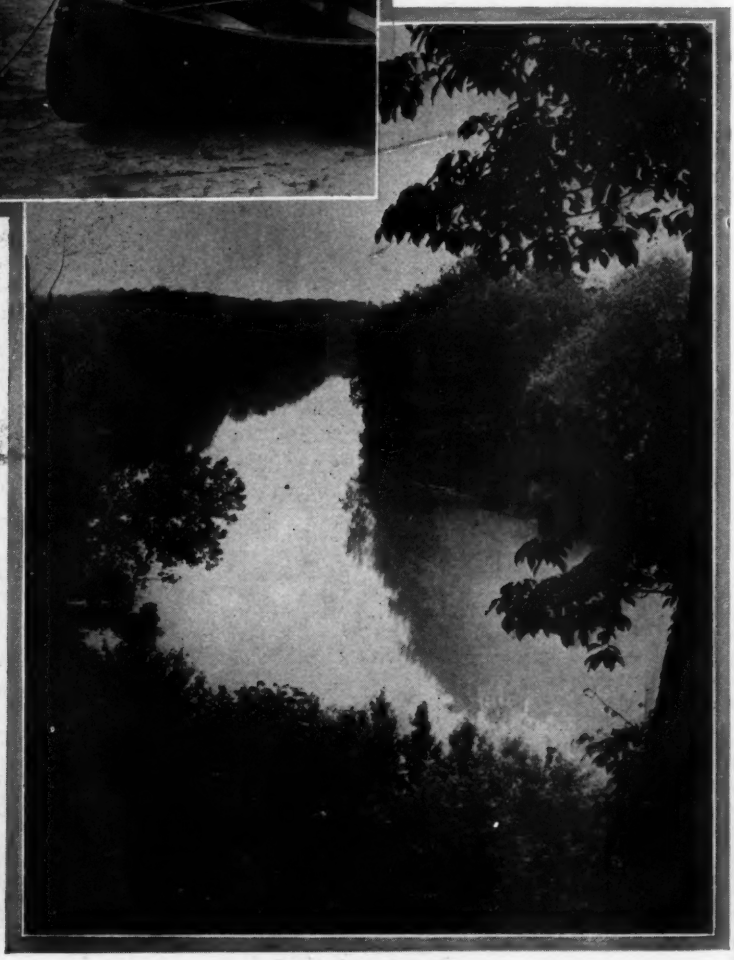


Right: Beans are an important canning crop. Canners have come to realize that successful sales depend upon the quality, flavor, color, and tenderness of the products which go into the cans. These factors of quality all originate in the field during the planting and growing season. To that end careful preparation of seedbed, proper fertilization, and cultivation are important.



Left: "That big fish that got away from me was every bit of that long,"—an old, old story.

Below: This spot, which calls to the summer vacationist, is a quiet bend in the White river near Bedford, Indiana.



The Editors Talk

The Marketing Act

American agriculture at last has gotten its "relief." Culminating years of fervid debate, the act which was approved by Congress and the President on June 15 is of vital interest to the whole nation. It has its supporters; it has its enemies. It may bring the desired relief; it may not, but in all due fairness to the solons and other good minds who have given America's agricultural depression careful thought, the act deserves a fair trial and the interest of everyone concerned.

The bill provides for a Federal Farm Board to promote the effective merchandising of agricultural commodities in interstate and foreign commerce, and to place agriculture on a basis of economic equality with other industries. It is believed that such a Board can help to minimize speculation; prevent inefficient and wasteful methods of distribution; organize producers into effective associations or corporations for greater unity of marketing; and prevent and control surpluses in any agricultural commodity, through orderly production and distribution.

From the policy of the bill, it is plain that the emphasis is on marketing. This is as it should be, for as in other industries today, the crying needs is for a proper balance between production and utilization. When production outpaces utilization and it has in agriculture, there is bound to be trouble. Danish agriculture has sensed the necessity of this proper balance in industry, and farmer cooperatives not only process and manufacture, but also sell farm products in local and foreign markets. In the United States farmer cooperatives too generally have been confined to local activities. This bill will make it possible for cooperatives in the United States to develop along the lines that have been developed in Denmark.

The importance of cooperative marketing is further emphasized in the bill in the section dealing with the special powers of the Board, which is to be composed of eight members appointed by the President. These special powers include the promotion of education in the principles and practices of cooperative marketing of agricultural commodities and food products, and the encouragement of organization, improvement in methods, and development of effective cooperative associations.

One of the outstanding features of the bill is the appropriation of $500,000,000 for a revolving fund which can be used to make loans to cooperative associations.

The Board may appoint committees representing certain agricultural commodities. These committees may apply to the Board for a stabilization corporation for the commodity which it represents. The Board may authorize such a corporation if it finds that the marketing situation with respect to the agricultural commodity in question requires or may require the establishment of such a corporation in order to effectively carry out the general policy of the act.

One of the rather unusual features of this bill is the power of the Board to

furnish insurance to cooperative associations against loss through price decline in the agricultural commodity which they handle, that is, provided similar insurance is not already provided for by existing agencies. Insurance against price decline is a new feature for agricultural commodities.

The chief cause of the agricultural depression was the inflation and deflation of prices during and immediately following the War. This inflation and deflation of prices caused a great disparity between farm prices and prices which consumers pay. The relatively high prices which farmers have to pay for the products which they purchase and the relatively low prices which they have received for the products which they sell have been the important factors in the agricultural unrest.

With an efficient system of marketing, which the bill intends, it is hoped that this situation will be relieved. The Federal Farm Board cannot accomplish this alone, a system of cooperatives cannot wholly solve the problem. The support and interest of every one concerned is needed to give the new Agricultural Marketing Act a fair trial.

Intensive Research

Announcement is made that the United States Department of Agriculture has created a committee on cotton research to be composed of eleven specialists representing its various bureaus. The purpose of this committee is to study and correlate the activities of the Department with a view to developing and rounding out a well-balanced program of research as profound and as extensive as the cotton problems with which this country is confronted.

In this announcement we see an important step toward improvement of American agriculture as a whole. What may be accomplished with the cotton crop will undoubtedly reflect in work upon other crops.

In appointing the committee, Dr. A. F. Woods, director of scientific work of the Department said: "There is a general feeling among growers, manufacturers and progressive leaders that the time is ripe for a general offensive against cotton problems." Dr. Woods suggested several fields for consideration by the committee. There is a need, he pointed out, for extended soil surveys in the cotton belt as the basis, both of research and practical improvement; for investigation of physical and chemical properties of cotton fibers as aid to cotton breeding and the determination of factors influencing the spinning quality of cotton; for reexamination of the principles of cotton breeding to the end that suitable varieties may be established for the several sections of the cotton belt; for intensive work on the problems resulting from insect pests of cotton and development of wholesale methods of prevention and control; for revision of cotton standards as rapidly as technological research justifies; profound study of the cotton markets—local, central, export, import, and future—and the price relationships in the market; and for studies of the utilization of cotton for clothing, household, and industrial purposes.

The Department's well-balanced program of cotton research should be so designed, says Dr. Woods, that it will provide our national extension organization, progressively, with more suitable and convincing material than has heretofore been available for presentation to the public and to growers through

county agents and other channels of dissemination.

Cotton was chosen as the most suitable commodity upon which to begin this national program of research and service activities. There will be much interest in this new program of intensive research and helpful suggestions on the problems surrounding other important crops should be gained from this work.

Truth In the News

In spite of the many precautions taken by leading metropolitan newspapers to establish the reliability of information, occasionally incorrect or misleading statements find their way into their columns. The rarity of such occurrences is a high compliment to the able manner in which the tremendous task of accumulating and disseminating the daily news is handled.

Such newspapers are always eager to be the first to correct their own misstatements when these are brought to their attention. In a recent issue the New York *Times* said editorially:

"[Potash] Prices soared 100, 200, 300 and even 1,000 per cent before, during and after the war. Potash shipments received at New York amount to about $17,000,000 annually."

As a matter of fact potash has maintained a relatively low price for many years with the exception of the period when the War caused an abnormal condition in world commerce. The *Times* gladly gave equal prominence to a letter bringing this fact to its attention, which said, in part:

"For the five years preceding the war the average price of muriate of potash, delivered in bags at Atlantic and Gulf ports, was $37.69 a ton. Of course, during the war, when the European potash supply was cut off from this country by a blockade, the price of this commodity was extremely high. However, after the war, as soon as commerce resumed a normal condition, potash dropped in price and today can be purchased at a lower figure than before the war.

"Over the past five years the average price of muriate of potash has been $32.61 a ton delivered in bags at Atlantic and Gulf ports. This is approximately $5 less than the average of the five years preceding the war, despite the fact that wages in Europe, cost of mining supplies and inland and ocean freight rates have all advanced considerably.

"Your statement that New York imports $17,000,000 worth of potash annually is rather misleading in that this port is one of the smallest receivers of potash, and potash importations are distributed from Searsport, Me., to San Francisco, Cal., with some shipments going through the St. Lawrence River and the Great Lakes to Chicago. The figure of $17,000,000 is approximately correct for the United States as a whole."

To the Meeting

"If you want to keep young, if you want to live in a live, interesting community, if you want to make advancement in your chosen field of work, go to banquets, socials, meetings, and other gatherings, and take active part in them."

This is the advice of the New Hampshire Extension Family and it is

sound advice. There is much to be gained in associating and exchanging ideas with people interested in the things you are interested in. Closed minds, like closed houses, are apt to become dull and gloomy. The New Hampshire advice points out that some people at thirty-five are old; they have closed and barred the doors of their minds against new ideas, and they have let life slump down to a low dead level of routine. Some gray-haired men and women of seventy-five are enthusiastic youngsters. The changing current of life gives them a great delight, and to be with them is like being in a thriving flower garden in June—beauty and surprise for every passing moment.

What do meetings have to do with this? The answer is obvious. Ideas are not so likely to become fixed when jostled about in free discussion, and the mind is not so likely to roam in futile speculation of past glory when challenged frequently by the marvelous discoveries of the present. The mental stimulation, the physical relaxation, the spiritual challenge of social contact help to keep us young.

We have all heard of dead communities and we think of them as places where people go about the dull routine of bread and butter existence, indifferent to the welfare of their neighbors and untouched by the surging currents of life outside. In the live community, the neighbors visit each other, change work when there are special demands, have socials to raise money or to celebrate birthdays, have concerts, lectures, banquets, and other social events. They observe holidays, take a sympathetic interest in schools. In the live community the people are quick to get the county extension agents working with them for a faster common development.

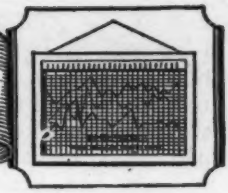
Some people call meetings time wasted. We have all heard the criticism, "He spends so much time going to meetings, he doesn't have time to do his work." Of course, meetings like other good things, can be overdone, but far more people suffer from lack of social, intellectual, and business contacts than from too much of them. The tendency to settle into a comfortable little routine within the farm boundaries is so great that many gifted individuals fall victims to it. Therefore meetings have an important place in the life of every community and in the program of every county agent.

Soil Improvement Contest

We regret that in an editorial regarding announcement made by the National Fertilizer Association of its contest of soil building programs, appearing in the June issue, we neglected to mention similar awards which will be granted six southern county agents. These awards will be made on a similar basis, namely, the presentation of outstanding county-wide programs of soil improvement for this year.

The winners are to be the guests of the Association at the Annual Meeting of the American Society of Agronomy in Chicago in November. The five members of the judging committee who will pick the winners are T. Roy Reid, assistant director of extension, Arkansas, chairman; C. P. Blackwell, dean and director of the Experiment Station, Oklahoma; J. N. Lipscomb, dean of the College of Agriculture, Mississippi; R. P. Bledsoe, agronomist, Georgia Experiment Station; C. B. Williams, head of the agronomy division, North Carolina Experiment Station.

AGRICULTURAL DEVELOPMENTS



By P. M. Farmer

BOTHERED WITH BEES?

If bees persist in occupying quarters where they are not wanted, they can be trapped out. That sounds like the "neatest trick of the week," but it's simple and practicable. The Department of Agriculture recommends that a cone of wire cloth be placed over the entrance to the home of the bees' choice. Of course there is a hole at the apex of the cone just large enough for one average bee to squeeze through. Going out is a cinch, but on the way back the bees give up because of the sharp points of the fine wire. If a hive is placed near the entrance of the swarm's quarters those that come out will finally collect in it. The queen won't come out but a new queen can be given the bees in the hive. After four weeks the trap may be removed and the entrance to the old home enlarged, whereupon the bees will go in and carry the honey to the hive. One precaution: if there are more than one exit there must be just as many more traps.

SEPARATORS MAY SEPARATE FARMER FROM HIS CASH

Dairy farmers have been cautioned long and frequently to keep the cream separator so adjusted as to limit the loss of butterfat to the minimum. A machine that is used, as this one is, day after day throughout the year is bound to get some attention finally, especially when it is possible to test the skim-milk and find out definitely and easily how much profit is going to the pigs. The grain separator, on the other hand, comes around only once a year and is out of mind most of the time. According to a farm mechanics specialist of the University of Illinois, it should be kept in mind long enough to have it properly adjusted. He has found, after testing about 100 threshing machines during the last four years, that loses of grain in some of them run as high as 10 per cent, whereas in a well-adjusted machine the loss of grain should not be more than one per cent. The average loss in one group of 23 machines was reduced from 1.4 per cent to .7 per cent by adjustments or changes in the methods of operation. The first rule for good operation, says this investigator, is to get as much information as possible from the dealer or the manufacturer on the operation of the machine and follow instructions.

MORE MONEY FOR RESEARCH

Representatives of 26 national farm organizations and associations representing businesses closely allied to agriculture met recently with Secretary of Agriculture Hyde and discussed the need for more money for carrying on research. They made the surprising statement that several American industries annually invest more money for scientific investigations of their technical problems than is expended by all agencies for agricultural research. They reasserted their determination to work for increased appropriations for research work in the Department. Chester Gray, Washington representa-

tive of the American Farm Bureau Federation, said that since this group began two years ago to focus attention on the need for more research on the problems of the farmer, the Department's annual appropriations for research had been increased about $3,500,000. These men said research is urgently needed in plant physiology, plant pathology, animal pathology, plant and animal genetics, nutrition of humans, animals and plants, utilization of plant and animal products, marketing and distribution, general economic problems including taxation, price trends, transportation and engineering, rural sociology, and publication of the results of research. The group will take their pleas to President Hoover and to the new Director of the Budget when he is appointed.

RETIRED, PERHAPS, BUT NOT TIRED

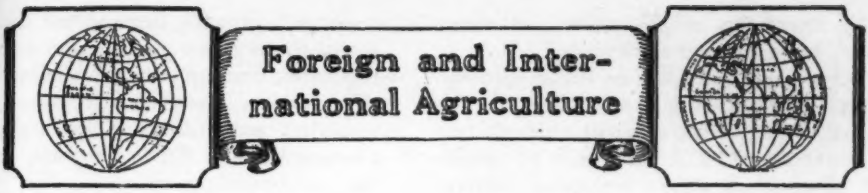
Retired farmers seldom completely retire, says Dr. Carle C. Zimmerman, sociologist of the Minnesota Agricultural Experiment Station, who obtained his facts from a study of incomes in 11 widely scattered Minnesota villages and towns. He found that they still earn 22 per cent of their total incomes in wages, while a larger share of the remainder is derived from town property than from farm property, the former being 32 per cent and the latter 28 per cent. Children of the retired farmers in these towns earned 6 per cent of the family income, but it is not shown whether any of this goes toward the family support. The wives of these retired farmers made 4 per cent of the income by keeping boarders and added another 1 per cent through wages earned. The average percentage of the income earned by the men of the families in these towns was 81, compared with the 22 earned by the retired farmers. It was found that some of the retired farmers return regularly to their farms and oversee or help their children. Others become tax collectors or assessors, or hold other various public positions. Some of them do common labor, often to keep busy and sometimes for the income. The investigator says unskilled laborers in these communities feel the competition of retired farmers.

FERTILIZE FOR ANAEMIA

We seldom find a more forceful commentary on the complexity of the age in which we live and the simplicity of the methods evolved by science than that of Dr. E. C. Brooks, president of the North Carolina State College of Agriculture, speaking before the recent meeting of the National Fertilizer Association at New London, Connecticut. He said that research into the cause and cure of pernicious anaemia carried on at his college and elsewhere shows that copper may be added to fertilizer and applied to the soil where plants absorb the element which when eaten by animals is concentrated in the liver. Then humans may eat the liver, which because of its copper content is one of the best-known dietetic amelioratives of pernicious anaemia. Dr. Brooks said the trend should be away from quantitative production of farm products and toward qualitative. Littler and better!

PRECEDENCE AGAIN

Dairy breed associations should open their herdbooks to many unregistered high-producing cows, O. E. Reed, Chief of the Bureau of Dairy Industry, told the recent annual convention of the Holstein-Friesian Cattle Breeders' Association in Philadelphia. This sort of thing, he said, might be considered by some as "rank heresy," but he reminded the breeders that all cattle now registered sprang from the common herd. Also he dared call attention to the slight differences existing between the production of unregistered and registered commercial herds today.



Canadian Soil Fertility

By H. E. Lefevre
Montreal, Canada

CANADIAN agriculture, with a few local exceptions only, has lived up to the present time mostly on the natural fertility of the soil. In many counties, however, he natural fertility is becoming so depleted that the use of chemical fertilizers is an absolute requisite for any attempt at farming. It becomes more and more difficult to secure crops of satisfactory quality, and sometimes to secure any crop at all that is in any way profitable, without adding nitrogen, phosphorus, and potash to the soil, to say nothing of other fundamental improvements such as drainage, the application of lime, etc.

That Canadian leaders are becoming aware of this fact is shown by many signs, but nothing is more significant than a report on "The Commercial Fertilizer Industry in Canada," recently published by the Natural Resources Intelligence Service of the Department of the Interior at Ottawa. The report takes into account the latest developments of the fertilizer industry in Europe as well as in America and is very up-to-date in its exposition of modern theories relative to fertilizers, both economic and technical. It is well worth the consideration of all agricultural leaders, whether fertilizer specialists or not, whether Canadian or not.

The preface states clearly that "The aims in view are:

1) "to put before the Canadian public the latest view of experts in world economics, namely that commercial fertilizer must be produced in e v e r - i ncreasing amount to maintain the present yield and sustain a multiplying population on the limited habitable area of this planet.
2) "to show the amount of commercial fertilizer which Canada is using, might use, and may contribute to the world demand.
3) "to give a summary of the legislation and tariffs that concern the Canadian industry."

That fertilizers are becoming more and more important in a well-balanced agricultural program is a well known fact.

> "Agriculture—the basic industry of mankind—depends more and more on fertilizer."

The limitations of farmyard manure are not overlooked:

> "The barnyard manure available is limited by the number of cows, horses, and sheep, and such manure, however rich in nitrogen and humus and desirable for the proper cultivation of a farm or garden, is generally deficient in the mineral elements carrying phosphorus or potash. It is also too bulky for economic distribution on larger areas

than the neighbourhood of farm buildings and stockyards."

Great stress is laid on the importance of nitrogen, both as a fertilizer in time of peace and as a source of explosives in time of war. A study of results obtained at recent European Conferences is presented. The opinions expressed by such distinguished authorities as Lord Melchett, Sir John Russell, and Sir Daniel Hall are carefully analyzed and long quotations of their speeches inserted. Industry and Science agree that farmers should use more fertilizers.

Having discussed the fertilizer question from a world-wide point of view the report then applies the general principles to Canada.

"Fertilizing, however, like charity, begins at home. The manufacturer who reads some of the following pages cannot fail to see that his home market also has boundless scope, that fertilizer applied in Canada in accordance with expert advice would enormously increase the profits of Canadian agriculture, and that what he at present supplies is a drop in the bucket compared with the need."

It is well to recognize the need of fertilizers, but how to carry the good word to the farmers?

"An industry to be flourishing, however, depends on a demand for its products. In the case of many manufactured articles a demand is artificially stimulated by advertising, display and appeal to the 'herd instinct,' and may have no definite bearing on the national well-being, but for no country is it easy to imagine a point of saturation in the case of fertilizer. In this case the national interest requires an increasing demand; depending, as it must, not on fashion or visible merit, but on experience and scientific knowledge of farm economics, the demand has to be fostered and stimulated by the slow process of education".

"It is, therefore, clear that to promote a growing demand for this national necessity there are two requisites, first, an educational campaign and trustworthy advertising; secondly, manufacturing foresight content to offer first rate goods at the least possible margin of profit."

Canada could do much to improve its fertilizer policy and its fertilizer industry even under present conditions. It is not impossible to think of a Canadian nitrogen industry. A careful compilation of figures shows that the "production and distribution of nitrogen has a boundless field."

Canada, more perhaps than any country, today has to build for the future and to think in terms of a few years ahead. It is proper therefore that an estimate should be made of what could be used by the Dominion in the way of fertilizing elements if more intensive, which is often the same as more economic, methods of production were generalized. For the eastern provinces alone, where today fertility is depleted, the figures arrived at are fairly astonishing. They are 148,747 tons for nitrogen, 221,761 tons for phosphoric acid, and 192,813 tons for potash. The report, however, goes further and considers not only the oldest part of Canada but the whole of the Dominion. The amounts arrived at may seem startling. They reach 375,000 tons for nitrogen, 570,000 tons for phosphoric acid, and 550,000 tons for potash. This, of course, is for the distant future, but the mere fact that it is possible to mention such figures and not be considered as utterly unreasonable shows that a radical change is happening in the Canadian conception of fertilization. In fact the report goes as far as to say "though this expenditure is at first sight appalling, consideration suggests that after all such an expenditure, when the time is ripe, might be profitable. . . . There is no end in sight to the amount of commercial fertilizer that the agricul-

(*Turn to page* 47)

REVIEWS

This section contains a short review of some of the most practical and important bulletins, and lists all recent publications of the United States Department of Agriculture and the State Experiment Stations relating to Soils, Fertilizers, Economics, Crops, Crop Diseases, and Insects. A file of this department of BETTER CROPS WITH PLANT FOOD would provide a complete index covering all publications from these sources on the particular subjects named.

Fertilizers

The Arkansas State Department of Conservation and Inspection, Little Rock, Ark., has published a bulletin giving complete details of the new fertilizer and cottonseed meal law. Every precaution has been taken to see that methods for analyzing, sampling, and branding of fertilizers be in accord with generally accepted views of the fertilizer industry and state control officials. Anyone interested in the study of the present tendency toward standardization of methods in the fertilizer control work will do well to secure a copy of this bulletin.

Soils

In Circular No. 55 of the U. S. Department of Agriculture is to be found a most interesting discussion of "Soil Factors Influencing Crop Production in the Arkansas Valley of Colorado." Of particular interest is the detailed study of alkali soils which are found in many sections of the western states. Dr. A. T. Sweet, Associate Soil Scientist, author of the bulletin, ably presents the results of an extensive survey of the region. He discusses at some length the importance of a better understanding of soil conditions and the need for more careful utilization of water. He also emphasizes the importance of proper use of well-balanced commercial fertilizers adjusted to the needs of various crops and soil types. Well-balanced rotations, he points out, are equally as important as well-balanced fertilizers. This circular should prove of interest to many agricultural workers in the western states where similar climatic and soil conditions obtain.

"Soil Survey of the Valier Irrigation Project," Agr. Exp. Sta., Bozeman, Mont., Bul. 217, Dec., 1928, William DeYoung.

"Soils of Willamett Series and Their Utilization," Agr. Exp. Sta., Corvallis, Ore., Sta. Bul. 240, Dec., 1928, W. L. Powers, C. V. Ruzek, R E. Stephenson.

Crops

One of the most recent contributions to our knowledge of the factors involved in the care and management of permanent pastures is Bulletin No. 155, Storrs Agricultural Experiment Station, Connecticut, by B. A. Brown and W. L. Slate. In this bulletin they have reviewed some of the outstanding literature on pastures. They have discussed in considerable detail the Hohenheim system, experimental work that has been for some years in progress at Cockle Park, England; also similar work in Pennsylvania, Rhode Island, Virginia, West Virginia, Ohio, New York, and Massachusetts. It is clearly pointed out that the proper use of fertilizers is an economic necessity if pastures, the most neglected phase of American agriculture, are to be regarded as a national asset. Of significance are the conclusions of the authors on the results of the Connecticut pasture experiment, based on the average corrected thermal production: superphosphate alone increased the pasturage 64 per cent; superphosphate with limestone 120 per cent; superphosphate and potash 86 per cent; superphosphate, limestone, and potash 128 per cent; superphosphate, potash,

and nitrate of soda (the latter applied annually) 103 per cent. The original treatments of the Connecticut plots included limestone at the rate of 2,000 pounds per acre, superphosphate (16%) 500 pounds, muriate of potash 100 pounds, and nitrate of soda 150 pounds.

One of the most interesting of the crop bulletins that have come in during the past month is the 28-page Extension Leaflet 49 of the Massachusetts Agricultural College. "Asparagus and Its Culture" is the title, and the authors are V. A. Tiedjens, W. D. Whitcomb, and R. M. Koon. Coming from a section where asparagus is a valuable crop and is grown intensively, this publication assumes importance to anyone interested in asparagus. With particular reference to the plant food necessary for profitable production, the authors state, "When we consider that a 125-box crop of asparagus takes from the soil approximately 160 pounds of nitrogen, 80 pounds of phosphorus, and 200 pounds of potash, it is a simple matter to figure out how much of a given fertilizer must be used. Some additional should be applied for leaching and the variable quantity taken out by weeds." The plant food requirements of the crop have been carefully studied and the fertilizer recommendations made in the publication are for average conditions, based on general practices in this and foreign countries, thus making the information of more than local value.

"Oat Varieties in California," Agr. Exp. Sta., Berkeley, Cal., Bul. 467, Apr., 1929, W. W. Mackie.

"Monthly Bulletin of the Department of Agriculture," Sacramento, Cal., Vol. XVIII, No. 4, Apr., 1929.

"Forty-first Annual Report," Agr. Exp. Sta., Fort Collins, Colo., C. P. Gillette.

"The Quarterly Bulletin," Agr. Exp. Sta., East Lansing, Mich., Vol. XI, No. 4, May, 1929.

"American Potato Journal," The Potato Association of America, East Lansing, Mich., Vol. VI, No. 5, May, 1929.

"Thirty-sixth Annual Report," Agr. Exp. Sta., University Farm, St. Paul, Minn.

"The Bimonthly Bulletin," Agr. Exp. Sta., Wooster, Ohio, No. 138, May-June, 1929.

"The Mineral Content of Grains," Agr. Exp. Sta., Logan, Utah, Bul. 210, May, 1929, J. E. Greaves and C. T. Hirst.

Department of Agriculture Immigration of Virginia, Richmond, Va., Bul. 258, June, 1929.

"Crop Plant Stimulation with Paper Mulch," U. S. D. A., Washington, D. C., Tech. Bul. 75, May, 1928, L. H. Flint.

"Peppermint and Spearmint as Farm Crops," U. S. D. A., Washington, D. C., Farmers' Bul. 1555, Feb., 1929, Arthur F. Sievers.

"Legume Hays for Milk Production," U. S. D. A., Washington, D. C., Farmers' Bul. 1573, Oct., 1928, J. R. Dawson.

"Mushroom Culture for Amateurs," U. S. D. A., Washington, D. C., Farmers' Bul. 1587, Mch., 1929, Vera K. Charles.

"The Farm Timberlot," Agr. Exp. Sta., Madison, Wis., Bul. 407, Mch., 1929, F. G. Wilson.

Economics

"To learn in detail the various ways in which the farmers in the upland sections of Arkansas have combined the elements of the farm business, and to consider the effect of their methods of management and enterprise operation upon the financial returns" is the purpose of Arkansas' new Bulletin 235. To accomplish this, Mr. J. A. Dickey, the author, secured records from more than a thousand farmers. He calls the bulletin, "Farm Organization and Management in Typical Upland Sections of Arkansas." The most important factor affecting the labor income on these farms was the size of the farm business. The larger farms had the larger labor incomes. According to the author, there are two principal reasons for the larger farms having larger labor incomes. First, is the type of farm organization, and second, is the effectiveness of enterprise operations and details of farm practice. The larger farms permit of a better utilization of land, greater labor efficiency, and a better balanced business. A very complete and thorough analysis is made of the farm management problems in this study.

The agricultural depression has been accompanied by important changes in the value of farm real estate. The general trend of real estate values in

the various states and sections of the country are given in U. S. D. A. Circular 60, "The Farm Real Estate Situation 1927-28," by E. H. Wiecking. Even though there has been a recovery in farm income since 1920, prices in farm real estate continue to decline. This bulletin will prove very interesting to everyone interested in land values.

"When Shall We Sell Our Corn?" Agr. Exp. Sta., Ames, Iowa, Cir. 113, Jan., 1929, G. S. Shepherd.

"The McIntosh Apple Industry in Western Montana," Agr. Exp. Sta., Bozeman, Mont., Bul. 218, Jan., 1929, Sherman E. Johnson.

"New Jersey Prices of Hired Farm Labor, Feedstuffs and Fertilizer Materials and Their Index Numbers, 1910-1927," Dept. of Agr., Trenton, N. J., Cir. 155, Feb., 1929, Dimitry T. Pitt.

"Prices of Fertilizer Materials, and Factors Affecting the Fertilizer Tonnage," Agr. Exp. Sta., Ithaca, N. Y., Memoir 119, Dec., 1928, Edmund Ellsworth Vial.

"Attitudes of Oklahoma Farmers Toward the Oklahoma Cotton Growers' Association," Agr. Exp. Sta., Stillwater, Okla., Bul. 178, W. W. Fetrow.

"Commercial Orchards in Pennsylvania," Penn. Dept. of Agr., Harrisburg, Pa., 1929, L. H. Wible.

"Planning and Conducting Extension Campaigns," U. S. D. A., Washington, D. C., Cir. 58, Dec., 1928, H. W. Hochbaum

"Respiration of Sorghum Grains," U. S. D. A., Washington, D. C., Tech. Bul. 100, Nov., 1928, D. A. Coleman, B. E. Rothgeb, H. C. Fellowss

"Training Teachers of Vocational Agriculture in Service," Federal Board for Vocational Education, Washington, D. C., Bul. 135, Agr. Serv. 36, Feb., 1929.

"Preparing Johnson Hay for Market in the Black Prairie Belt of Alabama and Mississippi," U. S. D. A., Washington, D. C., Farmers' Bul. 1574, M. A. Crosby

"Marketing Late-Crop Potatoes," U. S. D. A., Washington, D. C., Farmers' Bul. 1578, Feb., 1929, Wells A. Sherman, George B. Fiske, and J. W. Park.

"A History of Agricultural Extension Work in the United States 1785-1923," U. S. D. A., Washington, D. C., Misc. Pub. 15, Oct, 1928, Alfred Charles True.

Insects

As a result of recent investigations, the European corn borer, although primarily a corn insect, has been found on more than 200 different kinds of plants. This is an important new angle in the fight to control this insect which has loomed up as a great menace to American agriculture. "The Host Plants of the European Corn Borer in New England" is the title of a new U. S. D. A. Technical Bul. 77 by Benjamin E. Hodgson of the Bureau of Entomology, Washington, D. C., which gives detailed information on this line of investigation.

"Control of Pocket Gophers and Moles in California," Agr. Ext. Serv., Berkeley, Cal., Cir. 29, Mch., 1929, Joseph Dixon.

"Montana Insect Pests for 1927 and 1928," Agr. Exp. Sta., Bozeman, Mont., Bul. 216, Dec., 1928, J. R. Parker and W. B. Mabee.

"The Japanese Beetle in Pennsylvania," Penn. Dept. of Agr., Harrisburg, Pa., Vol. 12, No. 4, Apr. 1, 1929, T. L. Guyton.

"The Oriental Fruit Moth in Pennsylvania," Penn. Dept. of Agr., Harrisburg, Pa., Vol. 12, No. 8, June 1, 1929, J. R. Stear.

"The Maize Billbug in South Carolina," Agr. Exp. Sta., Clemson College, S. C., Bul. 257, May, 1929, Oscar L. Cartwright.

"Imported Parasites of the European Corn Borer in America," U. S. D. A., Washington, D. C., Tech. Bul. 98, Jan., 1929, D. W. Jones.

Diseases

"Apple Rust and Its Control," Penn. Dept. of Agr., Harrisburg, Pa., Vol. 12, No. 3, Mch. 1, 1929, W. A. McCubbin.

"White-Pine Blister Rust: A Comparison of European with North American Conditions," U. S. D. A., Tech. Bul. 87, Feb., 1929, Perley Spaulding.

Canadian Soil Fertility

(*From page* 44)

turist in Canada could profitably use."

Statistics that give an idea of the present consumption of fertilizers in Canada have been compiled. "Viewing the table as a whole, the most striking feature is the very small volume of fertilizer production and use of fertilizer products, whether domestic or imported." It is indeed "a drop in the bucket compared with the need."

An intensive study is made of the

price of fertilizers in Canada and of the part to be played by concentrated fertilizers. The last part of the report deals with legislation. The present status of Canadian legislation with respect to fertilizers is reviewed in detail and an idea is given of the fertilizer legislation in various countries open to possible Canadian fertilizer exports. A map is enclosed with the report.

No quotation perhaps is more characteristic of the spirit in which the whole work has been done than is the following:

> "The domestic demand, to say nothing of the foreign, will inevitably increase as population grows and the fertility of the soil is depleted, but its increase should not be left to the slow pressure of natural law. The less distant hope both for the benefit of agriculture and of the fertilizer industry lies in the rapid dissemination of a scientific knowledge of agriculture among farmers, orchardists, and truck growers of Canada and in a vigorous publicity campaign to demonstrate that the proper use of nitrogen, phosphorus, potash, and lime swells a bank account."

This analysis of the report necessarily is very incomplete. Copies of the report, however, can be secured through application to The Natural Resources Intelligence Service, Department of the Interior, Ottawa, Ont.

Notes from England

In discussing methods of improving fruit growing, quoting actual figures, Director R. G. Hatton of the East Malling Horticultural Research Station, England, stated that in an apple experiment where nitrogen, phosphoric acid, and potash were used, the trees produced $224.80 worth of fruit per acre, over a 3-year period; where potash was omitted, using only nitrogen and phosphoric acid, the trees produced only $132.10 worth of fruit over a like period. On another experiment the complete fertilizer produced $273.60 worth of fruit, while the fertilizer lacking potash produced only $196.80 worth of fruit. On a third experiment, the nitrogen, phosphoric acid, and potash fertilizer produced $446.40 worth of fruit, while the fertilizer lacking potash produced only $225.60 worth of fruit. These experiments ran contemporaneously for three years, and each was a different variety of apple.

The improvements noted in each case were brought about by four annual applications of sulphate of potash at the rate of 400 pounds per acre, costing about $12. Director Hatton further went on to say that fertilizers affect both the color and the maturity of the fruit, though the exact degree of either cannot be foretold in individual cases. During the past season, the improvement in color of the fruit of certain varieties was very obvious in the East Malling orchards when the fruit was still on the trees.—*Jour. Ministry of Agriculture, Jan., 1929.*

Potatoes fertilized with a well-balanced, complete fertilizer have better cooking qualities than unfertilized potatoes. Moderate amounts of nitrogen were satisfactory, but excessive amounts lowered the quality. Superphosphate in the fertilizer was also quite necessary for high quality. The absence of potash was reflected in poor quality tubers which turned black on cooking. The potatoes were better without lime than with it. These interesting and important facts were recorded by W. N. Findley and noted by H. V. Garner of the Rothamsted Experimental Station in the *Journal of the Ministry of Agriculture,* January, 1929.

Pages From A Field Note Book

Fertilizing *the* "Prairie"

By H. H. Halderman

Wabash, Indiana

ALTHOUGH Wabash county for the most part is clay loam, there is one section in the central part of the county containing three or four square miles that is known as "the prairie." This area at one time was a lake but is now a low, level plain that is so rich in humus that the dirt drifts in dry seasons. For years this prairie has grown nothing but corn with an occasional field of rye. Corn yields will average around 75 bushels. The corn growers in this prairie never have used fertilizer as it was not thought necessary.

In 1927, a number of the boys of 4-H club age who were the sons of prairie farmers entered the Rotary Corn Club. Purebred seed and sufficient fertilizer for an acre of corn were furnished by the Rotary Club. When the question of the kind of fertilizer desired was asked, the common answer was, "We don't need fertilizer in the prairie to raise corn." However, here was an opportunity to get fertilizer free-of-charge, so upon the recommendation of the county agent, an 0-10-10 was tried.

Shucking time came and in every case, the fertilized acres showed very noticeable differences in quality and in yield. It was found that the use of a high-potash fertilizer was very profitable on this type of soil. In 1928 and also in 1929, a large number of these prairie farmers fertilized their entire acreage. Levi Ridenour, one of the largest corn growers in the prairie, who started fertilizing his corn in 1928 as a result of the boys' corn club work, states that he considers the additional qualities of his corn alone is worth the cost of the fertilizer.

Complete Fertilizers for Apples

THE diet of the famous apples from the Northwest must contain plenty of potash, judging from the fertilizer used by prominent growers of this great fruit-producing region. Seventeen packed boxes of prime fruit per tree, or 850 boxes from 50 such trees per acre, are a yield which will arouse the interest of any fruit grower. That is the yield which Frank Maxey of Opportunity, Washington, secured from an orchard which he fertilized with 1,000 lbs. per acre of a 5-8-10.

George McCollom near Spokane, Washington, has secured a similar production per tree. Mr. McCollom is using a 5-10-10 fertilizer and began

the treatment seven years ago with an annual application of 10 lbs. per tree. No cover crops have been grown or any manure applied during this seven-year period. Outside of the leaves going back into the ground, nothing has been returned to maintain or increase its humus content. This orchard today is considered to be the best Jonathan apple orchard in the district.

Other fruit growers in this section are using 0-10-10, 3-10-10, and 5-10-10 mixtures. From the trees and fruit examined there is no question of the benefit derived from the use of these preparations.

Mr. McCollom is firm in the belief that his fertilizer practice has saved his orchard from severe winter injury. Both 1923 and 1924 were hard years on the apple trees in this section, many being either completely killed or rendered unproductive the following summer. Injury to fertilized trees was negligible, it being quite apparent that the vitality gained from the fertilizer enabled the treated trees to winter well and produce the next year.

Mr. McCollom also attributes to the fertilizer which he is using the better keeping and better coloring qualities and the tastiness of his apples.

Profits in Sweet Potatoes

IN 1928 Dr. D. D. Salley of Orangeburg, South Carolina, planted several acres of sweet potatoes as a part of his diversified system of farming. Although he plants more than 100 acres of cotton, Dr. Salley takes advantage of the fine opportunities which the soils of Orangeburg county offer, and grows such crops as small grain, soybeans, sweet potatoes, and some other truck which are suitable to that territory.

Last year Dr. Salley planted about 11 acres of sweet potatoes on a piece of gently sloping well-drained land. He planted four acres during the last of April and early part of May. The remainder were planted in June, and these potatoes did not do as well as those of the early planting.

Just before planting the four acres of potatoes, Dr. Salley applied all of his fertilizer, which was 750 pounds of a complete fertilizer analyzing a 4-9-9 (NPK). The four acres produced 1,100 crates, 1,000 crates of which were No. 1's and 100 crates of culls. He cured and regraded the potatoes before turning them over to the Carolina Sweet Potato Association for sale. After the regrading process was over, he found that there were 750 crates of No. 1 sweet potatoes.

The total cost of producing the sweet potatoes including cost of land rent, plants, fertilizer, mule labor, crates, handling, etc. amounted to $260.00. Dr. Salley received approximately $1,050.00 for his potatoes, thus making a net profit of $790.00 on the four acres.

CROSS plowing cotton to avoid the expensive hand labor item of thinning the stand by chopping has become a general practice in Nueces county, Texas, as a result of two years of demonstrations by F. W. Hoepfner, county agent. Cross plowing using two-row cultivators equipped with 8-inch sweeps is figured to cost 10 cents per acre, while hand chopping the crop runs to about 60 cents per acre. Twenty-five thousand acres were thus thinned in three communities of the county in 1927 and last year the practice had become widespread in 10 communities. It should be added that the land is nearly level.—*W. H. Darrow, Extension Editor, A. and M. College of Texas.*

Albert Tarr's Methods

(*From page* 30)

did not receive the side-dressing and according to both Mr. and Mrs. Tarr these rows did not yield more than a third as much corn as rows receiving the side-dressing. The corn from the rows receiving no side-dressing was slower to cure, there were more nubbins, and more rots than on the other rows.

Soybeans and Holstein cattle are Mr. Tarr's ammonia producers and with these aids he does not buy any commercial nitrogen. Figuring that a mature animal will furnish at least 10 tons of manure per year and that each ton will contain about 6 to 8 pounds of nitrogen, Mr. Tarr feels that his herd of Holsteins, plus legumes grown on the land regularly, will furnish sufficient nitrogen.

When speaking of his cattle, Mr. Tarr became very much enthused and with just cause, for several of the animals are producing five gallons of milk per day. This is about 40 pounds of milk daily or over 12,000 pounds annually. And in addition the herd is composed of individuals that show so much type that in the show ring they stand out prominently.

Although Mr. Tarr is known as a premier corn grower and exhibitor, he has other attributes that deserve attention. In 1928 he produced more cantaloupes per acre than any other grower in his section. He uses the same analysis fertilizer on this crop that he uses on corn with the addition of manure.

Southern Dewberries

(*From page* 26)

throughout the summer in order that the young vines may be assured of going into the dormant season in a strong, healthy, vigorous condition and free from these diseases.

In the spring, just before the blossoms open, another application of bordeaux should be given and still another one immediately after the blossoms fall. If the season is a rainy and damp one, a third spring spray should be given 10 days to two weeks after the second. Usually, however, with two to three sprayings with bordeaux in the summer and two in the spring, when given along with the sanitary precautions mentioned above, almost complete control of these two diseases is secured.

Growers now realize more fully than ever before that liberal fertilization with high-grade fertilizer goes a long way towards holding these diseases in check. In fact, fertilizer is just as important if not more important than the spraying, because the fertilizer helps the plants to throw off these pests and never let them get a start.

POINTING IT OUT

Agent—"No lady, this train goes to Baltimore, Boston and points east."

Just Graduated—"Well, I want a train to Cleveland and I don't care which way it points.—*V. M. I. Sniper.*

Doubling the Yield

(*From page 29*)

the three acres or 89 lbs. per acre.

Thus in five years Mr. Hering has more than doubled his yield of wormseed oil by increasing the amount of fertilizer used and the potash content of his mixtures.

A neighbor, Benjamin Gist, used a similar analysis high in potash this year and produced a much higher yield of oil. For three years Mr. Hering has made more oil, load for load, than his neighbor, even though Mr. Gist had a larger herb, grown with 500 lbs. of chicken manure and 200 lbs. of nitrate of soda. A well-balanced fertilizer for wormseed has paid both of these men.

The rotation by which Mr. Hering has built up the fertility of his soil is corn, wormseed, wheat, and alfalfa. The alfalfa sod is manured for corn. On this manor type of gravel soil, alfalfa is easier and cheaper to grow than red clover. The heavy fertilization of the wormseed crop is partly responsible for Mr. Hering's success with alfalfa. Last year he set a field to alfalfa. Part of this field had been in wormseed the year before. To the very row the growth of alfalfa was heavier on the wormseed ground.

What use has this farmer made of the land made available? More and better home grown feed for the herd of fine Guernseys on the farm is grown. For roughage he is feeding alfalfa hay and silage made from two loads of corn to one of soybeans. He has found it necessary to reduce his concentrated feed to 13 per cent protein, otherwise his cows will not eat the leaves of his alfalfa hay. Fertilizers are paying big dividends on his wormseed crop and saving money on his feed bill.

Good Potato Yields

(*From page 28*)

pounds of ammonium phosphate (13-48), 400 pounds of precipitated bone, 100 pounds of Calurea—total 1,800 pounds. Several new fertilizing materials will be found in this formula and perhaps would be questioned by a great many men raising potatoes, but just remember that Mr. Bermant is first a tobacco raiser and second a potato raiser.

Mr. Bermant was extremely careful of his soil preparation. He plowed his land in the spring with horses, averaging at least seven inches in depth. He did not, however, harrow this land with horses but used a tractor and tried to harrow as deep as the strip was plowed. Just before planting the rows were marked out, a three-row marker being used, and planting followed immediately after. The fields were not touched until the sprouts began to show, then a harrow was run over the entire acreage, followed by a weeder and then weekly cultivation, at least seven times and sometimes more before the season was over. Mr. Bermant did not use a riding cultivator, but used a one-horse cultivator of the seven-tooth variety. Just before the vines spread all over the ground, a two-horse hiller was used and low broad hills were made. This helped to cover the potatoes and prevent sunburn.

During the time of cultivating, of course, spraying took place. In fact, spraying is a mighty important factor in raising potatoes on the Bermant farm or elsewhere in Connecticut. For success it is almost necessary but is not more necessary than good fertilizer, good soil preparation, good seed, and many of the other factors.

Mr. Bermant purchased a new four-row, three-nozzle per row sprayer. In addition he had a power duster. He was thus amply provided with machinery for pest control. Nine sprays and three dustings were given to every acre. His system of spraying was outlined by the writer and followed very closely. It was necessary for Mr. Bermant to haul water in tanks on a truck to the field, the water being pumped into his sprayer through the aid of his high-powered sprayer engine. Barrels containing stock solutions of lime and copper sulphate were placed at different points in the field, thus speeding up the work. At first 150 to 200 gallons of bordeaux per acre were used. During the months of August and early September up to 300 gallons per acre were used. The formula was practically the same throughout, being approximately 8 pounds of copper sulphate, 10 pounds of lime, and 100 gallons of water. This material was thrown out under very high pressure, 300 pounds being constantly maintained with this machine. It can be readily seen that spraying the way Mr. Bermant did using 3 nozzles per row and getting complete coverage of the foliage, the foliage did not die due to blight. Much of it was killed by frost in the middle and latter part of October.

Mr. Bermant had ample help and assistance of machines to harvest the crop and from the field it was hauled to his newly constructed storehouse. He was then in a position to orderly market his crop.

Babying Soils

(*From page* 20)

before planting, then 200 pounds of a 2-12-4 or similar mixture at planting time. There was not enough extra yield to justify the extra time and expense, so now we use only the 200 pounds of complete fertilizer at planting time. We use 200 pounds of superphosphate on the oats, except in special soils as already mentioned, and no fertilizer on the meadows.

Volusia soils seem to have an unlimited appetite for lime. I have used all forms with good results, but have about settled on ground limestone which we can get near here at $3 to $3.50 per ton. We have found that an easy way of applying is to put it on top of the loads of manure at the rate you want it. We usually put it on new seedings of clover with fine results.

Volusia pastures are usually the poorest part of the farm. My own was no exception. When we bought our farm I had a notion to buy an adjoining one that could be gotten cheaply, before I got the idea in my head of trying first to improve what we already had. At first the 35 acres would hardly pasture 15 cows through the summer. We have increased the acreage to 50 acres by clearing. At first we limed, fertilized, and manured just the worst spots, and for two years clipped the weeds. Now we try to cover every part of the pasture once in four years with lime and manure. Thus far we have been using only superphosphate, but our county agent tells me of good results with the addition of potash, so we will try it. Now our pasture has little cinquefoil, moss, or weeds. Last summer it pastured in good shape 35 head of cattle and three horses.

Diversification Wins!

(*From page* 11)

ward the establishment of more legume crops in the county. This campaign resulted in the planting of 200 demonstration plots on farms that had not grown cowpeas before. These cooperators kept accurate check of the yield of the crops that followed, and the results obtained from this demonstration were remarkable. One demonstrator reported an increased yield of 351 pounds of seed cotton without fertilizer over a similar area that had no cowpeas plowed under.

County Agent W. L. Hall.

Laredo soybeans were also introduced in the county in 1925 through the establishment of 100 one-acre plots in every seduced in the county in 1925 though the establishment of 100 one-acre plots in every section. As a result of these demonstrations, the county planted more than 3,500 acres in 1926. Similar demonstrations were located in the county the following year and the program was continued also in 1928.

To increase the yield of corn, demonstrations in fertilization were established in various s ections of the county. One farmer using 600 pounds of 8-4-4 fertilizer made 48 bushels on his acre plot, while an adjoining unfertilized plot yielded only 8 bushels per acre. In addition to these demonstrations farmers were urged to plant corn in wide rows with a legume of some kind in the middles. W. R. McHenry, a demonstrator living near Conway, states that he can grow 30 bushels of corn to the acre in wide rows and have a legume crop in the middle to pasture his hogs on. Without this system McHenry says that he could not make 20 bushels.

In the last few years Faulkner county has taken the lead in its section of the state in the production of the county's principal crop—cotton. This production has been made possible only through the use of large amounts of fertilizer of a high-grade character. This county consumes

more fertilizer than any other county in the state, according to Hall. This did not just happen, but it is the result of continual recommendations of the Agricultural Extension Service of the University of Arkansas College of Agriculture and the cooperation of the banks and business interests of the county. In 1928 the crop amounted to more than 30,000 bales of cotton, and the consumption of commercial high-grade fertilizer reached the 12,000,000-pound mark. Business men now do not hesitate in making loans for the purchase of good fertilizer. They have found that it is downright good business.

There were forty 4-H Club boys completing the one-acre cotton growing contest this year. The average of the yields was 572 pounds of lint cotton or more than one bale per acre as compared with the county average of 155 pounds of lint cotton per acre in 1927.

Hall's soil erosion program included terracing demonstrations and schools on more than 200 hundred farms, representing every township in the county.

In order to encourage the growing of more dairy cattle, Hall secured the cooperation of the Conway Rotary Club, which organized and sponsored financially the importation of 26 purebred Jersey heifer calves in 1927. These calves were placed with 4-H Club boys and girls in different parts of the county. This shipment has been the nucleus for the building of the county's future Jersey herds. Five years ago there were 10 purebred Jersey bulls in Faulkner county and today there are 96. Early in 1928, the county Dairy Herd Improvement Association was organized in cooperation with the farmers in Pulaski, the adjoining county. As a result of this move more than 250 Faulkner county cows have been regularly tested for milk and butterfat production during the past year. Plans are now under way for the organization of a "testing-cows-by-mail plan" which will bring this service to every farmer in the county at a nominal cost.

The conservation and proper utilization of farm manure is being urged as the most practical way to increase the organic content of the soil. A number of demonstrations were established over the county. One demonstrator reported that corn on very poor land was made to yield 40 bushels per acre by the application of chicken manure.

Thus County Agent Hall has built a soil improving and soil conserving program around his county's principal crop—cotton, a program that is rapidly changing Faulkner county farming and one that points to a more profitable and successful agriculture. Because of this extensive soil improvement program, which is by no means ended, Hall won the honor of being one of the six outstanding Southern county agents promoting soil improvement programs named by the Soil Improvement Committee of the National Fertilizer Association in cooperation with agricultural extension services of Southern states.

Agriculture Today

(*From page* 15)

the destruction of more than $5,000,000 worth of livestock had these killers remained at large.

"The birds that eat insect pests of farm crops and those that eat the crops," Mr. Redington says, "are not always distinguished, the one from the other, by farmers. To aid growers in recognizing friends and allies, and to tell farmers the real truth regarding species sometimes held under ban is one of the jobs of the Survey. The nature of the food and the feeding habits of birds are such that it is impossible to learn them definitely by direct observation, but examination

of the contents of stomachs under the microscope gives information that is exact and indisputable. Reports on the food of more than 200 species of North American birds have thus far been published by the Survey, and some description given of the economic status of approximately 500 species.

"Related studies are being made of how to encourage the presence of beneficial species and what steps should be taken to control individuals or flocks that become injurious. Comparatively few kinds of birds are in the latter class, and most of them, in getting their own living, are working for the benefit of the farmer. They are active everywhere; some get their prey on the ground, and may then be accused wrongly of destroying planted or sprouting seeds; others work on the trunks and branches of trees; some scan the leaves or probe the flowers; others sweep their prey from the air.

"The number of insects thus gathered is enormous. Not only do orchards benefit by the service of the birds, but gardens, berry patches, and plowed and newly sown fields as well. All crops are helped to some extent, and practically every farm pest has its bird enemies. The majority of birds are beneficial, and in learning their habits, making them more widely known, and encouraging measures for their increase about homes, on farms, and in orchards, I believe the Biological Survey is performing a valuable educational service."

Nearly 4,000,000 coyotes have been killed since 1915.

On the Threshold

(*From page* 18)

P. G. Holden, agricultural leader known throughout the United States, made this prediction: "Land in Iowa will increase in value in the next 10 years. It is no more a prophecy to say that than it is to say that Iowa will have trunk lines of concrete roads extending entirely across the state within the next 10 years, both north and south, east and west. Nothing less than an earthquake or an upheaval which would turn Iowa into mountains or a desert could possibly prevent it. I do not believe that there will be anything comparable to a war-time boom. People will continue for another year or so to be rather conservative and in some places pessimistic in regard to buying land anywhere.

"Manufacturing and all other industries have attracted people for a number of years. Hundreds of thousands have left the farms, quit producing, and have become consumers in our cities. Before the expiration of 10 years, we will likely hear the cry for greater production in order

to meet the demands at home in the United States."

These statements must be interpreted in the light of present land values. They have reference to the general upward trend in agriculture, and allowance must be made for periodic price declines. Neither of these men see wild, speculative, upward trends. They believe that agriculture is basically sound and that taken as a whole it is becoming more prosperous.

Reason for Optimism

The statement of Eugene Meyer, Jr., Farm Loan Commissioner of the Federal Farm Loan Board, after he had visited several places in the corn belt, is, perhaps, a more accurate summary of the views just expressed: "I see the reflection of the improvement that has taken place during the past year. There is more building going on. There is more life. There is more activity. There is more of the spirit of 'going ahead.'

"There is, in my opinion, every reason for optimism. I don't believe in blind optimism. But I think that sound optimism is fully justified by the inherent economic facts in the situation, and by the prospects for the future. Our world markets for agricultural products are more stable as the result of stabilization of foreign currencies, which were so demoralized in the years succeeding the war. Foreign currency fluctuations had much to do with agricultural depression.

"As I see it, many of the problems inherent in post-war conditions are now things of the past, and there has been a material improvement in this section of the country. The steady progress upward will continue, I am confident, in the future."

Before we proceed to examine the facts which may throw some light on our future, let us analyze our present situation. Political speakers have been telling us that our agricultural property has fallen in value $20,000,000,000 since the war; and that figure is correct so far as it goes. In the war-time period of 1910-20, we became intoxicated with high prices and went out on a spree of wild speculation. During this time the number of farms increased 1.3 per cent, and the land in these farms slightly more. The value attached to farm property increased from $40,900,000,000 to $77,900,000,000. The increase in value during this time was twice the amount of the loss which was sustained since the war.

And again. If we make a comparison from stable conditions before the war to the bottom of the deflation after the war, say 1910 to 1925, the number of farms and the land in farms increased scarcely five per cent, but the value of farm property increased more than 40 per cent, or from $40,900,000,000 to $57,000,000,000. That is a gain of $16,000,000,000. Since 1910 we have made a gain of $37,000,000,000. The deflation of agriculture after the war, comparatively, has been too great, but it is altogether too much to expect that we should hold all the gain made during the boom period of the war.

What does it mean when we say that the population of the United States has increased 25 per cent during the last 15 years now ending, while crop production has decreased 8 per cent per 100 people and feed crops have declined 7 per cent of the population? Expert figures show that grain and stock exports have shrunken to prewar figures.

It is recognized that our greatest after-the-war problem was the disposition of our exportable surplus. Our surplus is now rapidly becoming a minor factor. In 1910 we had 60,000,000 cattle and 76,000,000 people. During the early 90's we got 3 and 4 cents per pound for our beef and 15 to 16 cents for our butter. In 1925 we had about the same number of cattle on our farms, but an increase of 40,000,000 people had to

be supplied with meat, milk and dairy products, and leather. With about the same number of cattle at the present time, we receive three times as much for beef and butterfat—9 to 12 cents per pound for beef and 45 to 50 cents per pound for butter.

As long ago as 1900 we had 17,000,000 dairy cows. There are no more at the present time although the population has increased 50 per cent. We are at this time milking about 4,000,000 beef cattle to help supply milk and other dairy products, and with our present high prices cannot produce all we consume at home. We are compelled to import relatively large quantities of dairy products.

We have at the present time about 32,000,000 ewes in the United States. That number is about the same that we had in 1900 and in 1910. Yet we are now importing hundreds of millions of dollars' worth of wool annually, and whereas we received about three dollars per head for sheep, we now receive about three times that much. For wool that sold for 12 to 15 cents, we now get 36 to 45 cents. We get a better price for a greater number of hogs.

Agriculture on Up-grade

So much for our grain and livestock. How have these increasing prices affected the declining prices of land? During the 12 months ending March 1, 1928, farm real estate values averaged for the United States as a whole, showed the smallest decline since the high time of 1920 when prices were 70 per cent above normal. The average decline last year was two per cent. In some places land values have already reached a steady level. The present price of land, for the United States, is 17 per cent above prewar, or 1917.

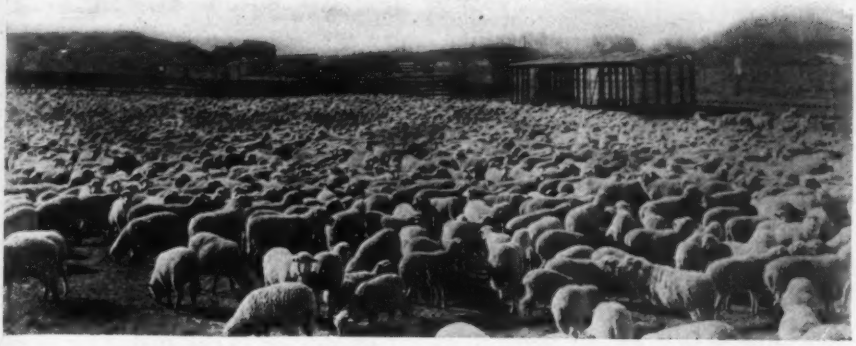
The situation indicates, according to Government surveys, that land prices are becoming firmer. There may still be some declines in farm values in certain localities or sections, but the number of farms that will have to be forced upon the market is rapidly becoming less, and when once the farms that will have to be sold get into firmer hands, one of the most important factors in depressing land prices will be removed. A factor of much importance at the present time in holding down the price of land is the lack of confidence. There is plenty of money piling up throughout the country. It will presently be seeking places of safe investment. Perhaps when the present wild speculative movement in stocks has reached its limit, more money will be invested in land.

While most economists and students of the agricultural problem agree that agriculture is on the up-grade, we must still recognize the fact that our condition is still below prewar levels as to income and purchasing power. All of our troubles have not been cured. So far, we have largely helped ourselves, and there is here, likely, our greatest hope, for our troubles are at best largely economic. The attitude of the Government in the matter of adjusting taxation, levying tariffs, building inland waterways, and establishing better systems of marketing and credit, will assist in securing agricultural equality.

When all of our opinions have been expressed, the fact still remains that we are only guessers of the future. The immediate forerunners of agricultural prosperity will be increasing prices for our products and greater purchasing power of our income. While long continued national prosperity must finally depend upon our farms, we should also keep in mind that the prosperity of agriculture is influenced by the general prosperity of the nation. It is the consensus of opinion that we have passed our worst years. The future will likely hold its ups and downs, bright spots and discouragements, but if the present trend should continue, as we believe it will, better times are just ahead. We have faith in the ability of agriculture to fully recover and become prosperous.

New Mexico

(*From page* 10)



Great flocks of sheep utilize the range country in New Mexico.

depth of 50 to 100 feet, there was formerly a temptation to try to raise such crops as alfalfa and corn by pump irrigation from such wells. Many of the early efforts failed, the returns not being sufficiently large to justify the expense, though in recent years success often has been attained, especially with cotton and beans, which have a comparatively low water requirement and high market value.

Hiram Hadley, the first president of the New Mexico Agricultural College and director of the Experiment Station, was one of the pioneer educators of the Southwest. He was followed, as director, by S. P. McCrea, C. T. Jourdan, F. W. Sanders, Luther Foster, and Fabian Garcia; Dr. Garcia having held the position of director and horticulturist during the past 16 years. It has been during his incumbency that much of the most effective work of the station has been accomplished. There are now 28 persons on the station staff.

Cotton

(*From page* 16)

in the United States and holding fourth place in acreage. In value it is exceeded only by corn and in acreage by corn, hay and wheat. It is the leading, commercial crop in the nation and in recent years more than half of our production usually has been exported. Last year's crop acreage for the United States is estimated at 45,326,000 acres with a production of 14,373,000 bales and a farm value of more than $1,290,000,000.

The United States has always been the leading cotton producing country and Texas has become the most important state. Formerly a very much larger portion of the cotton acreage was grown east of the Mississippi river, but in recent years a marked expansion has occurred in the states

west of the Mississippi river, notably Texas, Oklahoma, and Arkansas. As shown by the map, the cotton distribution is very largely confined to the southern tier of states from Texas east, with a few important ones just north of this tier.

Likes Hot Weather

The crop should have at least six months of frost-free weather to mature, it being a plant of tropical origin. It seems to do best in regions with considerable rainfall and much bright sunny weather during the growing season. A dry, cool autumn seems best for maturing. Fertile silt and clay loams seem to be best suited to its production, and because of the fact that it is very frequently grown in a one-crop system, it is an outstanding consumer of commercial fertilizers, especially in the older cotton areas where it is cultivated on the same soils continuously for a long time.

About 1892 the Mexican boll-weevil appeared in the cotton belt of the United States. This insect has spread through virtually the entire American cotton area and reduced the acreage in some states, thus stimulating a more diversified agriculture.

While cotton can be grown in a number of countries, the United States has long been the leader, with over 60 per cent of the world's production, followed by India, China, and Egypt. The American exports go very largely to Europe; the United Kingdom and Germany together take about half of the total. Other important export markets for American cotton growers are France, Italy, and Japan.

In addition to the production of the cotton lint, the production of seed is an important by-product. In 1928 the United States cottonseed production was estimated to exceed 6,000,000 tons with a farm value of more than $230,000,000. This seed has various uses in commerce; among the most important being for oil, feed, fertilizers, and chemicals.

"Kool Krisp" Lettuce

(*From page 6*)

ready to cut, they will be tip-burned, which means a browning of the edges of the leaves inside the head. Such heads cannot be shipped as they will develop slime rot before they reach their destination.

Market Is a Gamble

For a week or so following such a spell there may be a shortage on the market, and the trade will wire for more lettuce, offering high prices. Then it is that the heart is filled with woe—an acre of wonderful looking heads, but only here and there one fit to ship—perhaps only 15 or 25 hampers from the entire acre.

But the story may be reversed in a short time. In growing lettuce it is well to have a part of the crop maturing every five to seven days. At Phillips a planting is made about every five days from May 20 until about July 1.

It may happen that a period of cool, cloudy weather sets in, and the heads will form crisp and solid. Perhaps in other distant growing sections the weather has been unfavorable, which is often the case in August. Then the market will be strong, prices high, and there will be plenty of lettuce ready for shipment. When one has from 50 to 100 hampers daily to ship out at good prices, he forgets all about the woes of a short time before.

For head lettuce a complete fertilizer is used. A 2-8-5 or even a 2-8-16 mixture is applied just previous to

planting, and nitrate of soda spread along the rows twice during the growing period at the rate of 100 lbs. per acre.

Reports came from the New York Experiment Station that potash increased the tendency of head lettuce to tip-burn or "sun-scald." This was not found to be a problem on this farm. Experiments of putting applications of muriate of potash along the row in different sections of the field gave no increase in this trouble. The tip-burn was partly overcome when a somewhat resistant strain of seed was found.

A green-leafed Big Boston or "Unrivalled" type was found to be superior to any other tried out, although the New York or Los Angeles variety called "Iceberg" on the market gave very good results in years when the weather was cool during the growing period. Although in past years there has been some discrimination against the Big Boston type on the market, the "Kool Krisp" brand, as the lettuce produced by Carl Niebauer is known, has met with favor in the larger city markets. Practically the entire crop is shipped to Milwaukee, Minneapolis, and other nearby markets, by express.

Due to the heat during the month of August there is usually a shortage of good lettuce reaching these markets. This is the season of the year when the Phillips lettuce is at its best. Cool weather conditions and a cool muck soil are the factors necessary to produce quality head lettuce in Wisconsin.

During the past few years some of the most exclusive fruit and vegetable stores in the larger cities have been handling the "Kool Krisp" brand of lettuce and paying a premium for it, although at first but few dealers would handle it because of competition with the western "Iceberg" lettuce.

It is peculiar that no large competitors have sprung up in the head lettuce business in Wisconsin. A few have tried it but failed to produce good quality heads, and so Carl Niebauer is practically alone in the State today as a large commercial grower. He grows from five to six acres every year as well as about 15 acres of other truck crops, and expects to increase his acreage of lettuce this year. As he is now only 21 years old he can well be considered Wisconsin's largest and youngest grower of head lettuce.

Patriotism

(*From page* 4)

siderable anxiety to me. I am almost willing to start another war some time just to set going a fresh stock of hero stories.

Mencken, Ford, and Woolworth can write lucidly and demonstrate to us that we are a nation of standardized sardines all packed in the same can and trading at the same counters. Mencken gibes us for being so commonplace in our thinking, and Ford and Woolworth encourage us in it because it exactly suits mass production.

We may have taken our patriotism in some such synthetic doses and not even as frequently as we imbibe our religion. We have three or four national holidays against fifty-two Sundays, which gives us less time to sleep under the flag than to snore under the sermon.

American patriotism is just about as easy to define and card index as religion. Folks have gone through all sorts of tortures for religion, from burning at the stake to speaking pieces in Sunday School—and yet, after 2,000 years of debate and rivalry, the question is never settled until the sexton shows us that spades are trumps. If the fervid spellbinders of our youth could not entirely clarify the subject,

no matter how loudly the eagle squawked, is it going to be feasible for us to think it out calmly at the current cost of liquid inspiration and the hazards attendant thereto?

I seriously doubt whether the august Supreme Court itself could give us an inclusive definition that would depict the glory, the suffering, and the grimy grins which are the threads in our national tapestry of triumph. In fact, they might have a worse time than Sherman had in paraphrasing war, and not make it so brief either.

Opinion on patriotism here is as varied as a kaleidoscope, colored by the individual's own acquired or inherited reactions. To some it signifies visions of the cherry-tree-can't-tell-a-lie my country right or wrong! To others it means *Mayflower* ancestors, antique furniture, baked beans, liberty and equality, one and inseparable. Some folks look in the glass darkly and see brotherhood - of - man communism, plenty spaghetti, and swift justice. There are some who explain it by wisecracks, and a few earnest ones like ourselves in this corner who try to fit inherited principles to befuddling modern conditions. In America we are probably all correct about it, because this country doesn't care what your opinions are if you don't get too careless with your firearms.

PATRIOTISM is also like religion because it always adapts itself to the user. Americanism to the tolerant means tolerance; to the intolerant it means the reverse; to heroic patriots it means sacrifice and glory; to traitors it means a mask. It means liberty to the oppressed and license to the oppressor; it means extermination to the Indian and a welcome sign on the mat for the black-hander; it means hope for the big business booster and one lick and a promise for the farmer.

Fireside and village forum patriotism which tinged our childhood has had to give ground before the advance of industrialism and internationalism.

You remember Bill Smith, who once had time to chat with you over the backyard fence when you were both growing your own tomatoes? In those days before his industrial success enrolled him among the corporation nabobs, his heart was afire with ardent patriotism. How proud he was of those few withered plums on his family tree? How he dilated over the deeds of his grandsires at Lexington and Valley Forge, and waxed oratorical over the part his father played in the Bloody Angle at Gettysburg! Keeping up national ideals was his hobby, but he hadn't started clipping coupons then.

We depended upon Smith to finish off a lull in the Masonic party with the "Commemoration Ode" or "Washington's Farewell." He criticized the mayor when they forgot to display old glory over the battered city hall on holidays. He was always reminding the teachers of their national duty.

But Smith's attitude toward public affairs has changed. His politics have become policies. He doesn't journey to the "fair city on the Potomac to worship at the nation's shrine." He simply "hits the rattler for Washington to jack up the committee." When he says a Representative "speaks our common language" Smith isn't thinking of Stephen Decatur or Patrick Henry any longer, but of J. P. Morgan & Company.

No doubt I should not make any radical raid upon him for this. Is he not the captain of our mighty Host of Hustlers, the General of the Grabbers, and the Inspiration for our Initiative? Were I to assail him for his many accumulations, I should be put down with those who regard all big things as dangerous and all wealth as wicked. Yet I think our stock of patriotism rises within us a trifle when such fellows spend a few months' time in jail—for taking just one trip too many to Washington.

Reverence for the "totems" of our

government often causes less comment than the knocking down of a filthy voodoo fetish. Respect for the courts and the laws of the land suffer because we have too few courts to keep up with our many laws and their constant violations. Busy-body government paternalism has also turned choruses into curses.

Industrialism has built many concrete pillars in our national temple, but some spots in their job indicate the willful use of a pretty "weak mix." They post signs out in front telling young visitors to keep off the grass and wipe their feet on the threshold, but the dollar-a-day patriots have stabled their contented cows in the hall of fame and mowed the hay on the back lawn three inches below the frost line!

INTERNATIONALISM is another factor in patriotic thinking, along with oil wells and ne'er-do-wells. Once upon a time prior to the World War, I had a roadside argument with a parlor socialist. As both of us were out of our native elements, we fared badly one to another and vice versa. When we got through with the controversy one of us was still a Nihilist and the other was almost annihilated. He insisted upon waving only one vivid flag for all nations, but I knew the habits of Holstein bulls and wanted to add a little white and blue to make the color scheme safe and sane. My folks had been cattle men ever since the U. S. Yards opened at Chicago, and I didn't propose to get on the horns of any dilemma.

Then the war came and proved us both wrong! We Yankees fought for self-determination and then quit thinking just when the determination business began. The flair for internationalism flickered out and the new crop of fourth-class nations soon made the map of Europe look like Russian whiskers.

It's a fact, there are now more patriots abroad than was ever dreamt of in the philosophy of Giuseppe Garibaldi or Simon Bolivar. That's why I believe in squirting a little refreshment on our own parched collection of nationalists.

However, I don't wish to lean too far the other way. Aloofness is not becoming either to our patriotism or our welfare. Take my own case and yours. I enjoy my independent family life among my lares, penates, and the mortgage, and I would not care to move them all over to a common boarding-house. At the same time its nice to go out and gossip of an evening with the neighbors on the next porch, always knowing that when Jones gets to telling his fish stories, I can find some nice excuse to dodge indoors. That's my own sketchy idea of "hands across the sea" and it's about as far as my Americanism will stretch.

But I am glad we don't all wear our national pride like frat pins or lodge buttons. You must not judge a brother by what's in his coat lapel. When Iago said that it is not best to wear one's heart exposed on the sleeve he broke one of Bill Shakespeare's best records.

The Pullman car is a great proving ground of American character in a casual way. In the smoker one day I watched the soggy expressions of our every-day travelers who reflected the imprint of barter and trade on human countenances. Could any of these men be idealists? Their small chatter concerned the vagaries of government, the incompetence of officials, and the decay of democracy. Was there any instinct of patriotism hidden behind those blustering faces?

It was November Eleventh. The next station was to be reached shortly before eleven o'clock. Suddenly the burly conductor pulled the signal cord and the long train rumbled to a stop. The whistle shrieked and someone cried "Armistice."

Every man was on his feet, each trying to find the East in order to face it. Silence for one long solemn min-

ute, and then a tremendous spell of coughing, throat-clearing, and nose blowing. The spirit call from "over there" had broken through their hard-boiled shells, and I knew at once that I was not the only patriot in the Pullman.

In the days when the Colonials found themselves the actual governors of a country so vast as ours, they were as scared as we are over paying our taxes. They were so used to having a king that they didn't know how to act without one.

THE first fifty years of American independence were spent in weaning the nation from Royalty and getting its members acquainted with Loyalty. Some of the tests remain unfinished. There are some folks left in America who would behave better under a steam roller than in a limousine. There are some who think this is the land of the spree and the home of the knave, but exceptions never prove the rule.

Lip-service loyalty and hysteria do not represent the real brand of American patriotism. When we humbly perform our private obligations and stretch our stipends to pay honest debts before we ape the habits of "royalty," we are surely learning the lesson of loyalty. When we try to live like dukes on somebody else's ducats; when we stand up at the Star Spangled Banner and lay down on law observance—what sort of a tradition are we leaving by which mankind will judge our country.

I like to think that I myself am helping to make history. So do you. Had there been no ordinary chaps like us to play the obscure parts in the chorus, no dramas would have been enacted on American soil. We may not have any speaking parts to perform in the pageant of progress which the United States is presenting to the world. The "stars" in the cast may not suit us, and we may think the lines are not well composed. However, let's do our stuff nobly and be thankful not to be in the limelight within handy reach of the unedible eggs.

Hence if you start thinking how much love of country your boy is missing because he can't make whoopee so generally as we did on those famous Fourths, just take him for a walk and show him what an inspired and intelligent patriot his father can be. Lest you be embarrassed and outclassed, be sure you know the difference between Bunker Hill and the first "tee party."

Go out in the midsummer woods and sit down with him in close proximity to flora and fauna, of course avoiding the bee and the poison ivy. Measure off a yard in each direction. Then tell the boy that it will take both of you the rest of your days to classify and intensely study the living objects within that narrow zone. Tell him that despite changes in political platforms and styles in hair-cuts the modus operandi of these same natural phenomena will go on forever undisturbed. Tell him that these organisms were functioning before the American Indian acquired his Yankee citizenship, and that these were among the things discovered by Columbus and ruled by Herbert Hoover. Each is living its life as nature ordained, and the chief law is the survival of the fittest. Yet they are all as truly American institutions as we are and often more worthy of study. I take it for granted, however, that the boy will receive the true picture, one of complexity and independence on the one hand and of interchangeable benefits on the other.

That's how we who live in America should regard our patriotism. It is something priceless and complex, something independent and personal, and yet methinks it may be shared in the faith that all who become naturalized will desire as we do—to make this a haven for something besides expediency and explosives.

GETTING IT RIGHT

Otto Liebers and "Mutt" Lawritson were attending a concert in Omaha given by a noted band. They got into an argument as to whether one of the numbers was "Tales of Hoffman" or "Poet and Peasant Overture." Finally "Mutt" agreed to slip around to what he thought was the announcement stand to find out. Soon he returned and disgustedly remarked, "Otto, we are both wrong. It is the 'Refrain From Spitting'."

A father took his little boy, Billy, to the park, and there the youngster saw a stork among other interesting exhibits. The boy seemed to be greatly interested in the stork, and looked at him as long as he could. Then, turning to his father, he said disappointedly:

"Gee, Daddy, he never recognized me!"

"Rastus, I'm sure sorry to hear you buried your wife."

"Boss, Ah jes' had to. She died."

"So you asked Geraldine to marry you?" asked one man of the other.

"Yes, but I didn't have any luck," replied his friend. "She asked me if I had any prospects."

"Why didn't you tell her about your rich uncle?"

"I did, hang it all! Geraldine's my aunt now."

ROMANCE STILL LIVES

Wanted by a bachelor of middle age, to correspond with lady or widow of same age, with idea in mind of entering poultry business.—*Ad in a Montana paper.*

We argued for an hour, I guess,
But, really, men are too absurd;
For all throughout the argument
He wouldn't say a single word!

George: "Why don't you advertise?"

Town Storekeeper: "No, siree, I did once and it pretty near ruined me."

George: "How's that?"

Town Storekeeper: "Why, people came in and bought dern near all the stock I had."

A West Virginia darky, a blacksmith, recently announced a change in his business as follows:

"Notice: De Copardnership heretofore resisting between me and Mose Skinner is hereby resolved. Dem what owes de firm will settle with me, and what de firm owes will settle with Mose."—*The Outlook.*

NOTHING DOING

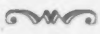
An Irish policeman was taking an examination for promotion. In answer to the question, "What is rabies, and what do you do about it?" his paper gave this enlightening explanation:

Rabies is Jewish priests, and you don't do nothing about it."

EASY *for the* FARMER

THE demand for potash is increasing. Farmers realize the importance of potash in fertilizers. The fact that potash can be very profitably used on many crops as a top-dresser or side-dresser is common knowledge.

It is our aim to co-operate with fertilizer manufacturers in making it easy for the farmer to get potash. If you know of farmers who have difficulty in obtaining high-potash fertilizers or straight potash salts send us their names and addresses and we will help them fill their potash needs at a reasonable price.



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